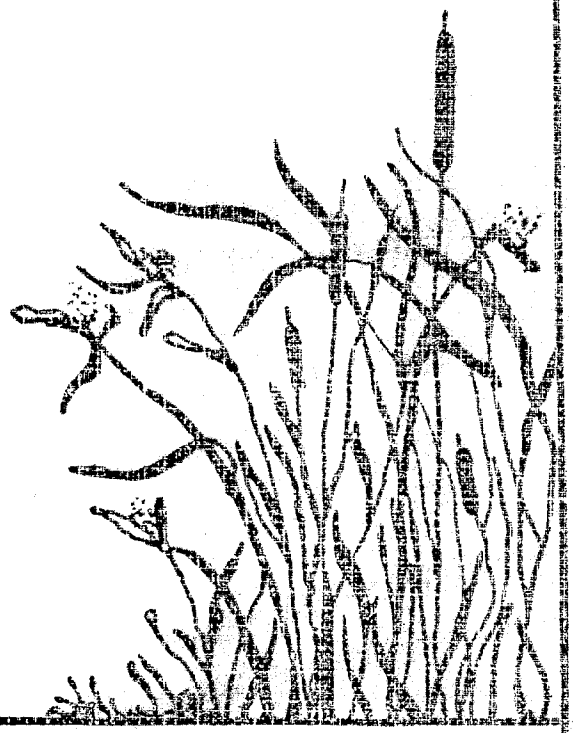
C2084

Maryland - Coastal Zone Management Program

COBB NECK
MASTER PLAN



COBB NECK
CHARLES COUNTY, MD

JANUARY 1988

REDMAN/JOHNSTON
ASSOCIATES, LTD.

COBB NECK MASTER PLAN

CHARLES COUNTY, MARYLAND

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JANUARY, 1988

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INTRODUCTION

The purpose of this Plan is to evaluate the development potentials and constraints affecting Cobb Neck, a peninsula in southern Charles County. This study evaluates the existing and proposed development patterns and their effect on environmental resources and existing public facilities,and providing a strategy for reducing the adverse impact of new development. It will also analyze the developmental potential of undeveloped properties to identify environmental constraints and opportunities which may exist.

The Master Plan serves as a formally adopted statement of policies regarding Cobb Neck's future. It provides guidelines for public decisions with regard to development regulations and capital improvements and informs residents and others of the County's intent with regard to its future. It identifies the controls and incentives necessary to make the plan a reality. The plan should be referred to regularly in order to assure that the many decisions made from day to day affecting land use and development and investment in the County are insofar as is possible brought into conformance with adopted policies. Finally, the County will integrate elements of this Plan with the updating of its Comprehensive Plan.

This Plan is divided into three parts; 1) Background Studies and Baseline Data; 2) Analysis and Evaluation; and 3) Implementation Options and Analysis. What is possible for Cobb Neck to be and to become by the year 2008 is necessarily closely related to what the region has been in the past and to what it is now. It is the special identity of the place that must form the Plan and provide a basic conceptual structure organizing and interrelating those goals and objectives. Part I provides this basic framework by describing the existing condition of the natural and built environment. Part II of the Plan looks at the special character of Cobb Neck as the conceptual basis for the Plan, and then considers the way in which trends and patterns of change may affect the area's future. This section includes an analysis and forecast of population, traffic, land use and community facilities, as well as a land suitability analysis. This is basis for evaluating existing facilities and policies for adequately accommodating future growth and addressing existing environmental constraints. Part III provides an analysis and evaluation of alternative

implementation strategies addressing the overall issues deemed most critical to Cobb Neck: Growth Management, Resource Protection; and Agricultural Preservation. Part IV includes the Land Use Plan Concept to be used as a guide for new development patterns on Cobb Neck. This part draws on the selected implementation strategies evaluated in Part III.

The primary mapping for the study area was developed at a scale of 1" = 2000' and are available in the Charles County Office of Planning/. Document size maps have been included for quick reference and are for illustration only.

PART I
BACKGROUND STUDIES AND BASELINE DATA

Part I provides the background necessary to develop the framework for guiding future development on Cobb Neck. The following sections provide an assessment of the current natural resource base and built environment to determine constraints and opportunities in the development of this region.

A. Socio-economic Characteristics

Population Characteristics

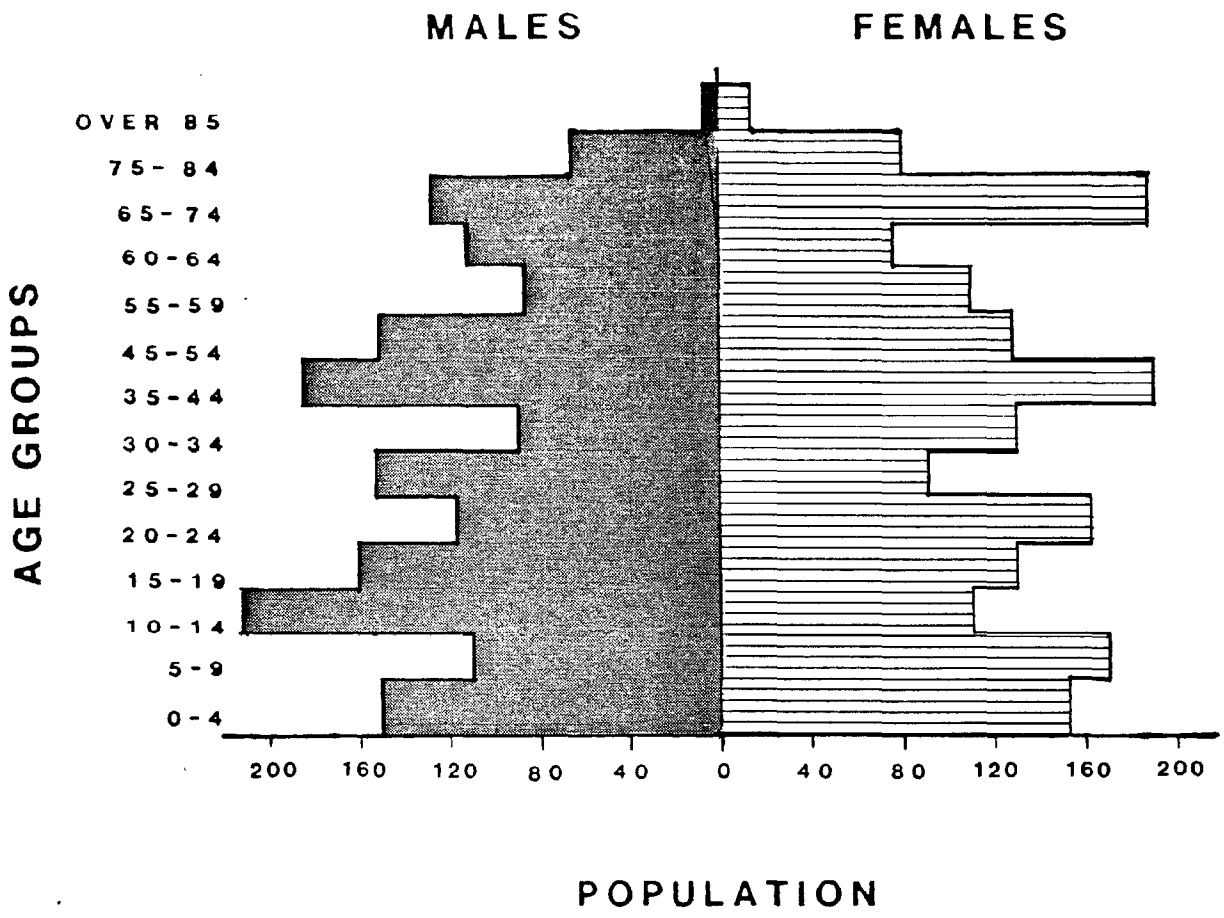
The current estimate of population for the Cobb Neck Study Area is 3779 based on building permit data through August 1987. Table I-1 indicates the past growth trends in the area as compared to the County in general. There has been a 45 percent increase in population since 1970 which does not match the Charles County's growth of 95 percent; however, it does represent a substantial and relatively constant growth rate throughout the seventeen year period. As basically a rural area, Cobb Neck at 100 persons per square mile is much less densely populated than the County in general at 186 persons per square mile.

Table I-1
Past Population Trends

	1970	% Change	1980	% Change	1987
Cobb Neck	2602	31.5	3423	10.4	3779
Charles Co.	47678	52.0	72751	28.0	93160

SOURCES: 1980 Census; Charles County Office of Planning and Zoning; and, Redman/Johnston Associates.

POPULATION DISTRIBUTION BY SEX AND AGE



SOURCE: CENSUS OF POPULATION AND HOUSING, 1980

FIGURE I-1

The age/sex distribution is depicted by the population pyramid in figure I-1. It is easy to see several characteristics. The largest cohort is the 35 to 44 year old group; however, it is evident than no one segment of the population has clear dominance. It is evident that the elementary and preschool age group is not predominate in the study area. Finally, the graph indicates a large proportion of the Neck's population (24.3%) is 55 or older. By contrast the County's proportion is only 12.3%. The third largest cohort is the women aged 65 to 74. These findings are noteworthy for future planning of public facilities and service oriented programs.

Income

The median household income for Cobb Neck recorded in the 1980 Census was $15,094. The median family income in 1980 was $18085, nearly 20 percent higher than the median household income for the study area. At the same time, the median household income for the County ($24,229) was 60 percent higher than that of the study area. Median family income for Charles County ($25,747) was also substantially higher than the Cobb Neck Area.

A closer look at incomes reveals that white families had a substantially higher mean income than non-white families. In 1980 white families had a mean income of $22,868 as compared to $14,274 for non-white families. Of the total population in the Study Area, 844 individuals had incomes at or below poverty level. Of the total 24 percent of the population with incomes below poverty, over 60 percent were black. Only 10 percent of the general County population are below the poverty level.

B. Local Economy

An analysis of current employment data can serve as an indicator of the general make up of the local economy. In 1980 a total of 1207 persons 16 years old and over were employed in civilian labor force with none in the armed forces. The percentage unemployed at 7.9% is not significant enough to indicate any localized employment problems.

Table I-2 helps to identify one of the strongest segments of the labor force, government service, showing 30 percent of the Area's residents working for either State, local or federal governments. Nearly one half of those work for the federal government and likely out of the County.

TABLE I-2
EMPLOYED BY CLASS OF WORKER

Private Wage and Salary Worker	656
Federal Government Worker	167
State Government Worker	42
Local Government Worker	152
Self-Employed Worker	167
Unpaid Family Worker	23

Table I-3 provides a breakdown of employment by industry for employed persons 16 years and over in 1980. As can be seen retail trade ranks the highest at 15.5%. Public Administration ranks next at 13.4% which further emphasizes the strong government influence in the local economy. Agriculture and construction are the remaining significant categories. It is evident that agriculture and to some extent fishing are a significant factor in the local economy since they employ 11.6 percent of the resident work force. When compared to the 2.7 % employed countywide, the significance is clear.

TABLE I-3
EMPLOYED BY INDUSTRY

Agriculture, Forestry,Fisheries, Mining	11.6	140
Construction	11.5	139
Manufacturing:		
Nondurable Goods	1.1	13
Durable Goods	1.8	22
Transportation	4.7	57
Communication, Other Public Utilities	5.7	69
Wholesale Trade	3.1	38
Retail Trade	15.5	187
Finance, Insurance, and Real Estate	5.5	66
Business and Repair Services	5.1	62
Personal, Entertainment, and Recreation Services	6.5	78
Professional and Related Services:		
Health Services	4.5	54
Educational Services	6.8	82
Other Professional and Related Services	3.2	39
Public Administration	13.4	161
TOTAL	100.0%	1207

C. Housing

The 1980 census found that there were 1327 total year round housing units in the Cobb Neck Study Area, with 1122 occupied. The number of seasonal units is 102 and considered significant especially when an additional 120 are held for occasional use. The remaining 95 vacant units yield a 6.7 percent vacancy rate. 19.3 percent of the housing stock is renter occupied which is slightly less than the County proportion of 21.0 percent. The trend has been toward owner occupied housing in the Study Area. The renter occupied housing as a percent of the total dwelling units in 1970 was 22.8 percent. (Ref. 3) This trend has continued throughout the eighties since owner occupied dwelling, single family detached makes up nearly all of the new housing stock.

Single family detached housing comprises 93 percent of the housing stock; whereas, attached and multi-family units only make up 4.4 percent of the housing on the Neck. There were 29 scattered mobile homes identified by the 1980 Census which are for the most part considered nonconforming uses. The land use survey conducted by the Office of Planning for Charles County during the summer of 1984 revealed a total of 44 mobile homes or 3.3 percent of the housing stock. This is somewhat less than the countywide proportion of 4.0 percent mobile homes.

Housing conditions on Cobb Neck vary widely. Table I-4 shows a distribution of housing units by the year they were built. Almost 23 percent of the structures are 48 years or older as compared to the County's 10 percent indicating an aging housing stock. A large proportion of the dwellings (42.6%) were built in the 1950s and 60s. The 1980 census reveals that there are 196 (14.7%) housing units without a bathroom or with only a half bath and 82 percent of those are renter occupied. The sole source of heat for 200 units is either room heaters with no flu, fireplace, wood stove, or portable room heaters. 192 units use other than conventional means of sewage disposal which invariably means outdoor privies. A pattern emerges from this data which indicates that approximately 15 percent of the dwelling units, most of which are rental units, have clear housing code violations. The same indicators on a countywide basis only represent approximately seven (7) percent of the units.

TABLE I-4

HOUSING UNITS BY YEAR BUILT

1979 to March 1980	20
1975 to 1978	209
1970 to 1974	84
1960 to 1969	262
1950 to 1959	304
1940 to 1949	148
1939 or Earlier	300

D. Community Facilities

Water and Sewer Service Areas

WATER SERVICE AREAS:

The majority of lands on the neck are not currently served by public water systems and have no planned service areas within the next ten (10) years. The study area currently has the following areas served by public water systems which are owned and operated by the Charles County Department of Public Works.

Cliffton on the Potomac

This system is operated by the County and serves approximately 450 people. Three wells supply the system which is rated at 216,000 GPD. Average daily demand is approximately 42,600 GPD. Thirty thousand gallons of water level water storage is provided.

Two new wells were constructed in 1975 to replace Well #2 which was pulling sand. Water is distributed through 6", and 8" and 10" diameter pipes. The County has operated this system since October of 1973. Ground water appropriation is 134,000 GPD. The County currently has planned $ 945,000 for water and sewer improvements in the 5 year capital improvements budget.

Swan Point

The County Department of Public Works operates this water system serving approximately 150 people. Average daily demand is 12,000 GPD. One well serves the system. Water Distribution is through 6" and 8" diameter pipes. The system was dedicated to the County in 1984. Groundwater appropriation if 60,000 GPD.

There are also the following privately owned water and sewer systems.

Morgantown Water Co.

This private water system serves 36 people in morgantown and is supplied by one well. DAily demand is 5,000 GPD; rated system capacity is 7,000 GPD. Groundwater appropriation is for 3,900 GPD.

Banks O'Dee Citizen Association

This privately-owned and operated water system serves approximately 120 people and is supplied by one well. Rated system capacity is 6,000 GPD with average daily demand estimated to be 12,000 GPD. Groundwater appropriation is for 9,600 GPD. A second well was drilled at the end of 1987.

Matthews Water Co.

Forty people are served by this private water system. Town wells supply the 44,000 GPD rated system. Average daily demand approaches 7,000 GPD. Groundwater appropriation is for 6,000 GPD.

SEWER SERVICE AREAS

Like central water systems, existing and planned sewer service areas cover a relatively small portion of the Cobb Neck Study Area. Likewise, the vast majority of the study area has no planned sewer service for the next 10 years. The following areas are served or planned to be served by public sewer systems owned and operated by Charles County.

Cliffton on the Potomac

Cliffton on the Potomac: - This subdivision is served by a treatment plant and four (4) pumping stations. It is programmed for development according to the following:

A. Clifton on the Potomac - Lots of Record - 512 Units.

B. Commercial and Light Industrial - 110 acres.

The expected wastewater flows for this subdivision would be as follows:

A. Residential Units - (300 gpd/unit) - .153 mgd

B. Commercial and Light Industrial (1,080 mgd/Acre) - .0119 mdg.

The treatment plant uses the activated sludge process operated in the contact stabilization mode with a 0.8 acre polishing pond. Sludge is processed on site in an aerobic digester and transported for ultimate disposal. The plant design capacity is

70,000 gpd, with a current average daily flow of 54,000 gpd. These design flows increase substantially due to a inflow and infiltration. A problem that is currently being addressed by the County Public Works Department. The effluent from the plant is pumped into the Potomac River. The plant is meeting all the NPDES effluent limitations except for biological oxygen demand and suspended solids for the first half of 1985. These problems are most acute during periods of storm flows. This was based on monthly averages for 1985.

Swan Point

Swan Point is a Waterfront Planned Community being developed by U.S. Steel. The facility serving this development is an activated sludge package plant that discharges in Cuckhold Creek and is rated at 70,000 GPD. This facility is owned and operated by the County. Present flow is approximately 20,000 GPD. The plant is planned for expansion to accommodate a total of approximately 2000 homes.

Cobb Island Service Area

The Cobb Island area is currently being studied under a 201 Facilities Plan (Ref 4) to provide centralized sanitary sewerage facilities. The area is now serviced by septic systems that have a record of numerous failures. The study has considered innovative and alternative treatment processes and techniques. Initial customer units are estimated to be approximately 500, with a future expansion of another 130. Within next 20 years, it is predicted that 2,679 persons would be the population of the planning area. The current design employs a S.T.E.P. system to provide a form of pre-treatment and a lagoon treatment system and land treatment of effluent.

The treatment facility is to be a two-cell lagoon and holding pond located on the Breeze Farm. This facility would treat the sewage from Cobb Island and the immediate mainland. There is to be a separate treatment facility located at the Cuckhold site to treat the waste from Matthew Manor, Woodland Point and Potomac View. The effluent from these treatment facilities wold be spray irrigated on the land. The Breeze Farm would be used in its entirety for spray irrigation. The surplus from the Breeze Farm Lagoon would be pumped to the Cuckhold site where it, along with the flow from Matthew Manor, Woodland Point and Potomac View, would be spray irrigated on the suitable land. The Cuckhold site would be used for future growth and the required reserve. The combined spray irrigation sites have a

capacity of 150,000 gpd which is sized to handle the existing homes and businesses. Actual operation will determine if there is any reserve capacity in the spray sites to allow more growth in the service area. (Ref. 4)

Recreation and Parks

With its 82 miles of shoreline and many marsh and wooded areas, Cobb Neck has exceptional natural assets for recreational use. Water oriented recreational activities have been especially popular both for area residents and for persons countywide. Several marinas and numerous private boat docks are present in the various rivers and creeks, and the presence of waterfront constitutes a major visual element in the appearance of area. Though the Neck is dominated by water, there are no public boat landings providing access to this recreational resource. This is an issue identified at both the April 1987 Public Forum and the November 1987 Citizen's Planning Workshop held in the Study Area.

INVENTORY OF RECREATION AREAS AND FACILITIES

The following identifies those parks and facilities currently available to the Cobb Neck residents. There are no planned capital improvements identified in the County's Five-Year Capital Improvements Program in the Study Area.

County Owned Property

Southern Park, located on Neale Sound is a district park of 40 acres. There are three ballfields, two tennis courts, a basketball court, play apparatus, restrooms, and a picnic pavilion overlooking a fishing pier.

Schools Within the District

1. **Piccowaxen Middle School** - on 29 acres has two softball fields, a multi-purpose field, four tennis courts, and five basketball courts.

2. **Wayside Elementary School** - has five acres set aside for recreation. In addition to play apparatus, it has a play field.

Privately Owned Property

1. Camp St. Charles, on the Wicomico River and Charleston Creek has three miles of beach, swimming pool, trails and other amenities associated with a residential camp.

2. Along the Potomac are several marinas - Aqualand with campsites, boat ramp and boat slips Morgantown Beach and Clifton on the Potomac.

3. At Cobb Island, three establishments offer boat ramps and more than one hundred-sixty boat slips.

4. On Swan Point, there is one 9 hole golf course, one swimming pool and two tennis courts.

E. Transportation

This section describes the existing situation for key road links and intersections for the Cobb Neck area in terms of average daily traffic volumes, accidents at key intersections, and the degree of congestion in terms of level of service. The initial effort involved an inventory and analysis of existing transportation facilities using the best available data. The results of this inventory effort are presented below. Based on contacts with state and county staff, and published materials, the following information relating to highways was obtained and analyzed: functional classification, existing average daily traffic volumes, roadway capacity /level of service and available excess capacity, and safety.

Functional Classification

The existing functional classification of Cobb Neck roadways is based on data from the State Highway Administration and (SHA) the County Department of Public Works. These classifications are based on traffic flow, access needs of adjacent land development, the network pattern of existing streets and existing land uses. The definitions are as follows (Reference 3):

Principal Arterial:

Carries a high volume of traffic for interstate and intra-state travel. Flow is usually uninterrupted from origin to destination.

Intermediate Arterial:

Carries a high volume of traffic for inter-county and inter-city travel. Traffic on this type of road normally has the right-of-way except in areas of high hazard, then controls are used.

Minor Arterial:

Carries a high volume of traffic for intra-county and inter-community travel. These roads normally serve the higher classification roads providing access to and from the arterials.

Major Collector:

Serves intra-county and inter-community travel, but at a lower volume and usually connects to an arterial to provide access to the surrounding land. Access is not directly from this road but from a sub-road connected to the collector. They may serve community shopping areas, schools, parks and cluster developments.

Minor Collector:

Serves intra-community travel at a volume below the major collector. Provides access to the land using lower order roads and sometimes direct access from itself.

Local:

Provides direct access to the land.

Cul-de-sac:

Is a special form of a local road and may connect to a local or a Minor Collector. It provides direct access to the land.

Commercial Street:

Is a special form of a minor arterial to serve commercial establishments.

Traffic Volumes

Average daily traffic (ADT) on roadway segments was available from SHA (years 1983-86). These data are entered on Table II-5. The highest ADT (17,000 vehicles) in Cobb Neck is on Route 301, the principal arterial in the region. Maryland Rt. 257 is currently classified in the 1986 Update of the County's Transportation as a major collector and handles 3950 vehicles per day at Newburg. The ADT drops to

1500 vehicles at its southern end entering Cobb Island and averages 2100 around Tompkinsville. Route 234, another major collector, on the fringe of the study area carries 2900 vehicles per day at Glasva. The other roadways in the Study Area are Local in function and total 64 miles in the County system.

Capacity/Level of Service

To evaluate the operation of specific road sections, the capacity of the major roadways was determined. The roadway capacity is a function of the roadway classification, number of lanes, pavement type and intersection control. The daily service capacity for each roadway classification was determined from the Highway Capacity Manual. The Route 301, designated as principal arterial, has the highest capacity of 34,000 vehicles. Route 257 has a capacity of 4400 vehicles to maintain Level of Service (LOS) C as a rural highway (REF. 7). Most of the local roadways in the Cobb Neck area have limited capacity and would require major work to receive any additional development.

Using the ADT and the estimated capacity, a volume to capacity ratio (V/C) was determined. This ratio ranges from values of 0.12 on underused portion of Rt. 257 near Rock Point to volumes near capacity (0.9) on Rt 257 near Newburg. Rt 254 has a volume to capacity ratio of 0.22 and Rt 234 has a ratio of 0.66 at Glasva. The Level of Service descriptions are presented in Appendix C. All of the roadways in the Study Area are currently operating at a level of service C or better. This includes Route 257 which has an estimated daily excess capacity of 550 vehicles, based on the roadway classification, terrain and peak hour characteristics.

Safety

Accident summary from the state's high accident location (HAL) report have been evaluated for the Cobb Neck area no high accident intersections were discovered. In 1986, there were 39 accidents on Rt. 257. There were 3 at the Rt. 257 and Rt. 301 intersection. There were 3 at the Mt Victoria intersection and 6 where Rt. 257 meets Rt 254. Mt. Victoria road had 9 accidents through the length during the same time period.

Commuter Patterns

In order to analyze the future circulation needs, it is important to understand commuter patterns of the region. Table I-5 and Table I-6 together show that the vast majority of workers leave the area to work. Table I-5 indicates that 263 work outside the County and 91 work outside the State. Table I-6 shows the mean travel time to work of 41.2 hours. This indicates movement out of the area to work. The large number (384) commuting 60 or more minutes indicates that a large number of residents commute to the Washington D.C. or the suburban counties to work. It is interesting to note that carpooling is the mode of commuting for 28.2 percent of the workers which is less than the 34.1 percent for the county commuter in general. This may be a factor in assigning trip generation for future developments on the Neck.

TABLE I-5

WORKERS BY PLACE OF WORK

Worked in State if Residence	
In County of Residence	749
Outside County of Residence	263
Worked Outside of State	91
Not Reported (16)	212

TABLE I-6

WORKERS TRAVEL TIME TO WORK

Less Than 5 Minutes	22
5 to 9 Minutes	123
10 to 14 Minutes	36
15 to 19 Minutes	154
20 to 29 Minutes	190
30 to 44 Minutes	234
45 to 59 Minutes	109
60 or More Minutes	384
Mean Travel Time to Work	41.2

F. Natural Resources/Physical Characteristics

Topography

Cobb Neck lies in a portion of the Atlantic Coastal Plain showing considerable topographical diversity. There are two principal topographical features: an upland plain in the central portion of the Neck and a low flat plain in the western and southern parts of the area. The upland plain is moderately dissected by narrow and deep stream valleys. Elevations in the upland plain range from 160 feet above sea level in the northwest to 50 feet in the southeast. The upland plain is fringed by a sow flat plain that reaches its broadest point along the Potomac River. The valleys flatten out , and the topography is correspondingly lower. As the streams reach the Potomac River and the larger tributaries, the area consists of low-lying flats and marshes of elevations less than 20 feet.

The general topography is shown by contour lines on the Natural Habitat Areas Map (at a scale of 1" = 2000'). The slopes greater than 25 percent on Cobb Neck have been mapped based on the U.S.G.S Quadrangle sheets and represented on the Development Suitability Synthesis Map. (See Document Map II - 1 for general location.)

Water Features

Cobb Neck is within two major basins: the Potomac and Wicomico Rivers. Mt. Victoria Road marks the approximate location of the drainage divide between these two watersheds. The majority of the Neck drains into the Potomac River. All the major streams in the area flow southward to the Potomac. These major streams include Piccowaxen and Cuckhold Creeks.

Shoreline Erosion

Shore erosion can seriously limit waterfront use and development. Residential, commercial, and industrial development can by cutting into the shoreline and altering its configuration increase shore erosion problems. The areas with historically significant shoreline erosion have been identified on the map titled Natural Habitat Areas. (See Document Map I-1.) The areas with erosion rates greater than 2 feet per year are located between Bachelors Hope Point and Swan Point and northwest of

Woodland Point on the Potomac River. Opportunities exist on the Wicomico River shore for controlling erosion by directly vegetating an existing sandy shore.

Aquatic Habitat

Submerged Aquatic Vegetation (SAV) around the Neck is very sparse. Several communities occur along the Potomac shore, but none have been identified on the shores of the Wicomico. (See Document Map I-1 titled Forest Cover and Aquatic Habitat.) Natural oyster bars have been known to exist along both the shores of the Potomac and the Wicomico Rivers and are shown on the map titled Forest Cover and Aquatic Habitat.

Though all the Rivers and streams in the region are anadromous fish migratory waters, the Wicomico River upstream from Barber Point has been designated as a anadromous fish spawning area. The area from Barber Point upstream to Allens Fresh is a known spawning area for yellow perch, white perch and herring. The yellow perch are more ubiquitous and may be found spawning in tributary streams through the study area. (Ref. 5)

Wetlands

Wetlands is a collective term for land-water edge areas and submerged bottoms which occur in coastal and inland areas. These areas usually support extensive growths of aquatic plants because of either permanent, temporary or intermittent submersion or inundation by natural surface runoff resulting from rainfall, tides or seasonal flooding. Because of the abundance and diversity of vegetation in wetlands, these areas provide some of the most valuable habitat to aquatic and terrestrial wildlife and migrating and wintering waterfowl. Aquatic plants contribute dissolved oxygen to wetland waters, increasing the assimilative capacity of water bodies. Some potential toxic materials are stored by wetland vegetation.

Tidal wetlands are scattered along the shores of the entire peninsula. The largest concentrations of these wetlands are located at the headwaters of the Wicomico and around the Cuckolds Creek area. The Neck also has an extensive network of non-tidal wetlands throughout the study areas. The largest of these areas is located at the headwaters of the Wicomico.

Plant and Wildlife Habitats

As described in this plan habitat areas for wildlife abound in the Cobb Neck study area. The most unique habitats have been identified on the Natural Habitat Areas Map. The bald eagle is the most frequently reported rare and endangered species on the Neck. Conservation areas have been identified on the Map and are protected through the Natural Heritage Program or the Maryland Environment Trust.

Soil Limitations for Development

The coastal plain soils of the area are in general, naturally acidic, low in fertility and highly intermixed and variable as to their limitations or suitabilities for selected land uses. The landscape of Cobb Neck may be classified into four (4) general categories:

1. Uplands - above 100 feet evaluation;

2. Steep Slopes - between uplands and low stream terraces.

3. Low terraces - below 40' elevation

4. Floodplains/tidal marshes.

Soils vary between these categories in texture and drainage properties. Stream valleys in the northern half of Cobb Neck are commonly deep and narrow with relief of up to 100 feet or more. The southern portion is dissected by numerous creeks with very gradual rates of fall. Elevation falls off at a gradual rate in the South and rapidly in the north towards the Potomac and Wicomico Rivers.

All of the soils on Cobb Neck are acid and consist of relatively unconsolidated layers of sand, silt, clay and some gravel. Generally, upland soils in the Cobb Neck region are well to moderately drained and have a sandy loam or silt loam surface layer over a sandy clay loam or a brittle, dense molted silt loam subsoil.

Low stream terrace soils are mostly poorly to moderately drained and have silty surface layers over heavy silt loam and silty clay loam subsoils. These terrace areas

are nearly level, larger flats with some gently sloping, moderately well drained to well drained sandy ridges. Some of the silty soils are slowly permeable due to a clay layer. Floodplain and tidal marshes are wet for long periods and subject to flooding. Soil material ranges from sand and gravel to silt and clay.

Septic Suitability

The most commonly used system for sewage treatment and disposal at private homes on Cobb Neck consists of a septic tank for settling and treatment of sewage, and a subsurface leaching system for the disposal of septic tank overflow. Suitability classes have been assigned to all soils by the USSCS on the basis of soil characteristics. Three major suitability classes of limitations have been established: slight, moderate and severe. These soils have been identified on the Document Map I-3 titled "Soils with Septic Limitations." As can be seen, the majority of the lands in the study area have severe limitations for on-site septic systems. This is particularly true of the land located in lower coastal plain (less than 50 feet elevation). This is further substantiated by the list of septic tank failure areas shown below. Areas with slight to moderate constraints are scattered throughout the study area but are concentrated north of the Clifton subdivision. The use of these soils classifications must be with caution since the soils samples they were based on were made only to a depth of less than four (4) feet. It is for this reason that the General Development Suitability Synthesis has not shown the upland areas of the region to be unsuitable for development. It has been shown through the experience of the Environmental Health Office that much of the underlying strata in this area is suitable for on-site disposal.

SEPTIC TANK FAILURE AREAS

Cobb Island
Chigger City
Woodland Point
Potomac View
Rock Point
Popes Creek
Aqualand Area - From Cliffton
on the Potomac to Nice Bridge
Morgantown-Southview

Geology/Water Resources

The rocks beneath Cobb Neck are composed predominately of gravel, sand, silt and clay. These materials were transported by streams from the Appalachian and Piedmont region west and north of Charles County and deposited in the form of alluvial fans, deltas and as estuarine and marine mud and silt layers.

The oldest rocks in the study area are the Chesapeake Group and are tertiary in age (30 million years). They are composed of clay, sandy-clay, sand and marl. The Chesapeake Group is not extensive in the Cobb Neck area but is exposed along tributaries of the Pope Creek and Piccowaxin Creek. The Columbia Group overlies the Chesapeake Group and occupies the northern and central portion of Cobb's Neck. These rocks are Pleistocene in age and are composed of clay, sands and gravel.

The Talbot formation occupies the entire southern portion of Cobb Neck and is also Plestoecne in age. The composition of the Talbot Formation varies from clayey loam in the upper part of the formation to clay, sand and gravel in the lower part.

The deposits of Pleistocene age are source of groundwater for shallow farm and domestic wells in Cobb Neck. The most favorable locality for the development of groundwater supplies from these surficial deposits is in flat upland areas.. Although they cannot be used as a source of large quantities of water at any particular place, they continue to be an important, though dispersed, source of domestic and farm water supplies.

The Aquia formation is the principal source of potable water in the study area. The aquia aquifer consists of a medium to course grained glaucenitic sand. Carbenato shell makes up 20% of the aquifer material in some places. The thickness of the Aquia in the Cobb Neck area ranges from approximately 110 to 125 feet. (See Appendix B for data on 55 sample wells in the region.) Generally, the transmissivity or rate at which water is transmitted through an aquifer is closely related to the thickness of the aquifer.

The transmissivity of the Aquia in Cobb Neck is low considering that in areas of Anne Arundel County it is about 3 times as high. However, considering the low population density of Cobb Neck (100 persons/square mile), and the under utilization

of the Aquia, the relatively low transmissivity of the Aquia is not a factor regionwide;however, in densely populated areas such as Cobb Island it should be a consideration.

Presently, the heaviest user of groundwater from the Aquia aquifer in Southern Maryland is the Lexington Park PNATS area of St. Mary's County, approximately, 26 miles southeast of Cobb Neck. In computer simulated drawdowns from the potentiometric surface in the Aquia Aquifer, based on 20 years of 3.0 M gal/d pumpage in the Lexington Park area has shown that the potentiometric surface in Cobb Neck will be reduced but not significantly, considering population projection or the study area by the year 2005 is approximately 215 persons/square mile. Potentiometric surface represents the height at which the water level stands in lightly cases wells that penetrate the aquifer.

Water Supply

One of the most pressing issues identified by the Cobb Neck residents is the declining level of the Aquia Greensand aquifer which is the major supplier of domestic water supply in the Study Area. This problem has been well documented by Environmental Health Services of Charles County. Though the problem has been experienced areawide, the decline seems to be most acute on Cobb Island where the housing density is the greatest. The relative depths of the formation (approximately 250-290 feet below sea level) the Island homes (10-20 feet above sea level) and physical limitations of shallow well centrifugal pumps (optimal lift of 25 feet of total dynamic head) have combined to cause periodic water shortages on the Island.

When these drilled wells were first installed many of them flowed; they were truly "artisan wells." However, the Aquia is one of the most widely used aquifers on Maryland's coastal Plain and especially the Eastern sections of Charles County. Greater usage has lead to a gradual decline in the potentiometric surface of the aquifer. This, combined quantity to cause situations in which water is available at very low pressures or possibly not at all. Generally this lack of water is a nuisance to the home owners. At some point the property owner must make a decision form 3 possible options.

1. Attempt to install a jet-type pump which will incense the practical lift from the 25 foot available with a centrifugal pump to approximately 65 feet of lift available with the jet pump.

2. Have a well driller install a 4 inch drilled well with a submersible pump that will supply enough water for many years but at a cost of $4,200 to $5,200.00.

3. Try to live with their present system as long as possible usually accompanied with a severe cutback in normal water usage. Over the past 14 years approximately 55 replacement wells have been installed. The rate of replacements per year have increased over the last 3 years. Of the 55 replacement wells, 20 have been installed within the past 36 months, 15 within the last 15 months, 8 within the last 3 months. (Ref. 2)

To date approximately 20 percent of the homes on the Island have replaced their well systems. The opportunity for installing a community wide water system has been explored by the Charles County Dept. of Public Works; however, no plans currently exist to develop such a system.

Sand and Gravel Resources

The Document Map I-3 shows past and present mining operations and areas of potential gravel resources in the Cobb Neck Study Area. The sand and gravel deposits are by far the most important mineral resource in Charles County. Though the potential exists, the mining activity is not as extensive in the Cobb Neck area. The upland areas are dotted with limited scale borrow pits not matching the size of the larger scale operations in the northern part of the County. The Soils map indicates areas of potential upland sand and gravel resources with deposits greater than ten (10) feet in thickness since these areas are considered the most economic to mine and are the most important source of sand and gravel in the region. Since Cobb Neck is predominately undeveloped there has been very little pre-emption of the resource by competing uses such as has occurred in the Waldorf-La Plata area. (Ref. 1)

Diatomaceous earth is a potential mineral resource in the study area. It is found mainly in the Calvert formation along the north branch of Piccowaxin Creek and Popes Creek. Deposits appear at the surface in the vicinity of Popes Creek. Commercial mining of diatomite in Charles County has occurred sporadically in the past, but with out much success due to the impure nature of much of the material and thickness of the over burden. Future increases in shipping costs may make the mining viable for the Charles County deposits. (Ref. 6)

G. Existing Land Use

The existing land uses have been surveyed in the field and recorded by the Charles County Office of Planning in detail on 1"=600' maps. (See Existing Land Use Map). This information has been updated and mapped at a composite scale of 1"=2000' for analysis. Once identified and mapped, the land use distribution was calculated by class and represented on Table I-7 for description and further analysis. On the basis of this inventory the following observations were made.

Generally, the Cobb Neck Study Area is a region dominated by farm and forest with very little urban type development. Eighty-five percent of the area or 23,049 acres is in crops, pasture, or large stands of forest. An evaluation of the Neck's major land use areas are as follows.

Residential

Single-family residential is the dominant land use type in the study area. Though the survey revealed no identifiable multi-family acreage, the 1980 Census did reveal approximately 35 duplexes and 20 multi-family units. It is likely that the duplexes are subdivided single-family units or accessory apartments and the multi-family are located in one of the motels along Rt. 301. Including rural residential (lots 2-10 acres), the total percentage of area in residential use on Cobb Neck (12%) is greater than the total percentage classified as residential in the county as a whole (10%). It is noteworthy that almost 6 percent of the land area is used up in large lots not actively in farm production. Among the suburban and high density residential areas, there are lots that are not currently buildable but will be opened up when planned central sewer service becomes available.

Commercial

In the Study Area 341.6 acres or 1.3 percent of the land area has been identified as being in commercial use as compared to the County percentage of 0.2. The primary commercial areas are locate along Rt. 301. Though it tends to be scattered along Rt. 301, there are nodes of commercial activity at the major intersections and at the bridge. The Existing Land Use Map reveals the marina operations as the dominant type of commercial use along the shore areas. Away from Rt. 301 Cobb Island offers the next largest concentration of commercial uses.

Industrial

In spite of the rural character of the Study Area, industrial land use as a percentage of total area exceeds the County proportion by eight (8) times. This is obviously due to the location of the PEPCO Power Plant, which is the dominant industrial use area in the County. Though a single industry dominates this area, it is one of the most stable industries and; therefore, provides secure employment opportunities to the residents.

Parks and Open Space

There are 47.0 acres of land developed as parks or designated as public open space. These areas do not include Maryland Environmental Trust easement areas or the school grounds used for recreation. This acreage equal to 0.2 percent of the land is low when compared to the total County percentage of 1.3 percent. The most notable park area is Southern Park.

TABLE I-7
EXISTING LAND USE

EXISTING LAND USE	COBB NECK ACRES	COBB NECK PERCENT	CHARLES PERCENT
Rural Residential	1589.8	5.9	9.6**
Suburban Residential	469.7	1.7	
High Density Residential	1152.9	4.3	
Multi-Family Residential	0.0	0.0	
Public/Semi-Public	39.9	0.1	1.0
Industrial	428.4	1.6	0.2
Commercial	341.6	1.3	0.3
Parks, Playgrounds and Open space	47.0	0.2	1.3
Agriculture	23048.8	84.9	71.1
Forest	12390.0	45.7*	43.0*
Crop/Pasture	10658.8	39.3*	28.1*
Other (towns and fed lands)	--	--	16.5
TOTAL	27118.0	100.0	100.0

* Subtotal of Agriculture

** All Residential

References--Part I Background Studies

References Cited

1. "Sand and Gravel Resources and Mined Land Inventory of Charles County, Maryland" James R. Brooks Maryland Geological Survey, 1986.

2. "Memo dated August 2, 1983 RE: Water Supply-Cobb Island" Environmental Health Services, Charles County Health Department.

3. 1980 Census Summary Tape File 3A

4. Charles County Comprehensive Water/Sewage Plan, 1985

5. The Chesapeake Bay in Maryland-An Atlas of Natural Resources Alice Jane Lippson Baltimore, 1973.

6. "1986 Comprehensive (Plan) Update" Charles County Office of Planning.

7. Highway Capacity Manual, Transportation REsearch Board, 1985.

Other Sources

1. Availability of Groundwater in Charles County MGS, 1967

2. Hydrogeology, Digital simulation and Geochemistry of the Aquia and Piney-Point Nanjemoy Aquifer system in Southern Maryland MGS, 1983

3. Records of wells and Springs, Chum analysis and selected wells logs in Charles County, Maryland MGS, 1966

4. Water level decline in the Magothy Aquia in Southern Maryland related to increases in pumpage MGS, 1983

PART II
ANALYSIS/EVALUATION

Part II of the Plan looks at the special character of Cobb Neck as the conceptual basis for the Plan, and then considers the way in which trends and patterns of change may affect the area's future. This section includes an analysis and forecast of population, traffic, land use and community facilities, as well as a land suitability analysis. This is basis for evaluating existing facilities and policies for adequately accommodating future growth and addressing existing environmental constraints.

A. Population Growth

The amount, distribution and timing of population growth and development are elements that a growth management discussion must address. These factors, in turn, determine the cost of providing the facilities needed to support the new population and also determine non-residential growth of the County. Cobb Neck has grown steadily during the past several years and this growth is expected to continue into the year 2005. (See Table II-1)

TABLE II-1
POPULATION PROJECTIONS
COBB NECK

	Scenario 1	Scenario 2	Scenario 3	Charles County
1970	2602	2602	2602	47,678
1980	3423	3423	3423	72,751
1987 (Sept)	3779	3779	3779	93,160
1990	3981	4071	4319	100,200
1995	4234	4549	6344	111,200
2000	4487	5027	7694	120,400
2005	4742	5505	9044	128,700

Population forecasts prepared by RJA employ three growth scenarios. Scenario 1 assumes a straight line projection from 1970. Scenario 2 takes into consideration the recent increases in building during the past five years and assumes that trend will continue by projecting that trend to the planning horizon. Scenario 3 takes into consideration the current build out of Swan Point, as well as, the potential build out of the WPC section. is also assumes market conditions continue to be favorable. Scenario 1 projects a total increase of approximately 963 or a 25 percent increase by 2000. This forecast assumes a depressed market conditions. Scenario 2 projects a total increase of approximately 1726 or a 46 percent increase by 2000. This scenario is consistent with the overall growth projections of the County. According to the Maryland Department of State Planning forecasts, the County's population will increase by approximately 35,540 in the next 17 years or 38 percent. Finally, scenario 3 results in a population increase of 5,265 or 139 percent which would indicate a strong need for growth management.

TABLE II-2
PROJECTED CHANGE IN POPULATION
COBB NECK

	Scenario 1	Scenario 2	Scenario 3	Charles County
1987-90	5.3	7.7	14.3	7.6
1990-95	6.3	11.7	46.9	11.8
1995-2000	6.0	10.5	21.3	8.3
2000-2005	5.7	9.5	17.5	6.9

Table II-2 indicates the projected changes in population by five year increments. Again, scenario 2 produces growth rates comparable to the County. Scenario 3, which is the most probable, shows a growth rate more than double the countywide rate. Even averaging the three scenarios indicates significant demand to year 2005. Based on the recent building permits issued the growth seems to be concentrated in Clifton or Swan Point.

B. Land Use Trends

An evaluation of existing parcels on the Neck has revealed a significant number of vacant parcels estate size or smaller which could absorb the projected demand for residential units. Approximately 584 parcels were determined to be vacant based on the land use survey performed by the County Office of Planning during the summer of 1984. Based on the experience of the County Health Department in the various areas of the Neck about 40 of those lots have a good potential to receive approval for onsite sewage disposal. Some 500 lots are considered vacant on Cobb Island which could become buildable once the sewer system is installed. A realistic number based on a minimum lot size of 15,000 square feet would be 20 to 30 home sites. Also approximately 370 lots are available in Clifton which are contingent on sewer service availability. Finally, there are approximately 350 lots platted in the Swan Point R-15 Section. This lot availability along with the 1500 units approved for the Swan Point WPC has been considered in the projections in Table II-3.

Table II-3 shows a projection of housing units in the Cobb Neck Area for the three growth scenarios described in the population projections sections and current building permit data.

TABLE II-3
HOUSING UNIT PROJECTIONS
COBB NECK

	Scenario 1	Scenario 2	Scenario 3
1970	1172	1172	1172
1980	1398	1398	1398
1987 (Sept)	1530	1530	1530
1990	1605	1638	1730
1995	1699	1815	2480
2000	1793	1992	2980
2005	1887	2169	3480

TABLE II-4
LAND CONSUMPTION OPTIONS TO SATISFY PROJECTED DEMAND FOR HOUSING UNITS

		ACRES NEEDED				
	Additional Units	0.5 acre Lots	1 acre Lots	3 acre Lots	5 acre Lots	20 acre Lots
SCENARIO 1	357	179	357	1071	1785	7140
SCENARIO 2	639	320	639	1917	3195	12780
SCENARIO 3	1950	975	1950	5850	9750	39000

Table II-4 follows from Table II-3 showing Housing Unit Projections and indicates the amount of land needed under several lot size scenarios. This simple analysis illustrates the relationship between minimum lot sizes and amount of land that is converted from farm and forest to residential use. The larger lot configurations also consume more land for road networks and have a greater potential to disrupt viable farming operations and habitat areas. The degree to which these projected land areas will impact on farmland and sensitive natural resources depends to a large degree on the policies that evolve from this plan and the platted lots existing on the Neck.

C. Development Suitablilty Analysis

A basic tenet of environmental planning is that it is possible through careful research, study and analysis to determine the suitabilities of any land area for various land uses. This method, summarized in the accompanying Land Use Suitability Analysis Diagram in Figure II-1, is used to check the plan concept presented in the Land Use Plan element of this plan. The detailed analysis of natural and built environmental factors discussed in the second part of this section provides the basis for the land use suitability analysis for Cobb Neck.

Method

Step 1 Identification of Suitability Factors

The first step in the analysis was to review all major proposed future use categories for Cobb Neck against specific natural and built environmental conditions in the study area in order to identify those factors that are particularly relevant to determining the suitability of any given area for a specific use. For example, areas served or proposed to be served with public sewer are so limited in their extent in the Cobb Neck area, and areas with severe constraints for on-site sewer systems are so extensive, that areas sewered or to be sewered are seen as highly suitable for uses in the development categories and least suited for agriculture, rural residential use and natural parks.

Severe constraints for on-site sewer limit the suitability of areas that are not served with public sewer for most types of development. Location of development within the hundred year flood plain is subject to federal regulation and is both a potential hazard for life and property and a constraint upon the natural function of this important element in the surface water system. On the other hand, the alluvial soils typically deposited in these areas are generally fertile soils for farming. Erodible soils and soils with a high runoff potential require special measures in farming and during the construction process to prevent sedimentation of the stream system and the bay. Where such conditions are severe, the affected lands are poorly suited for playfields and activities that repeatedly disrupt the vegetation needed to mitigate them. Because of their widespread harvesting, forests are in many parts of

DEVELOPMENT SUITABILITY ANALYSIS

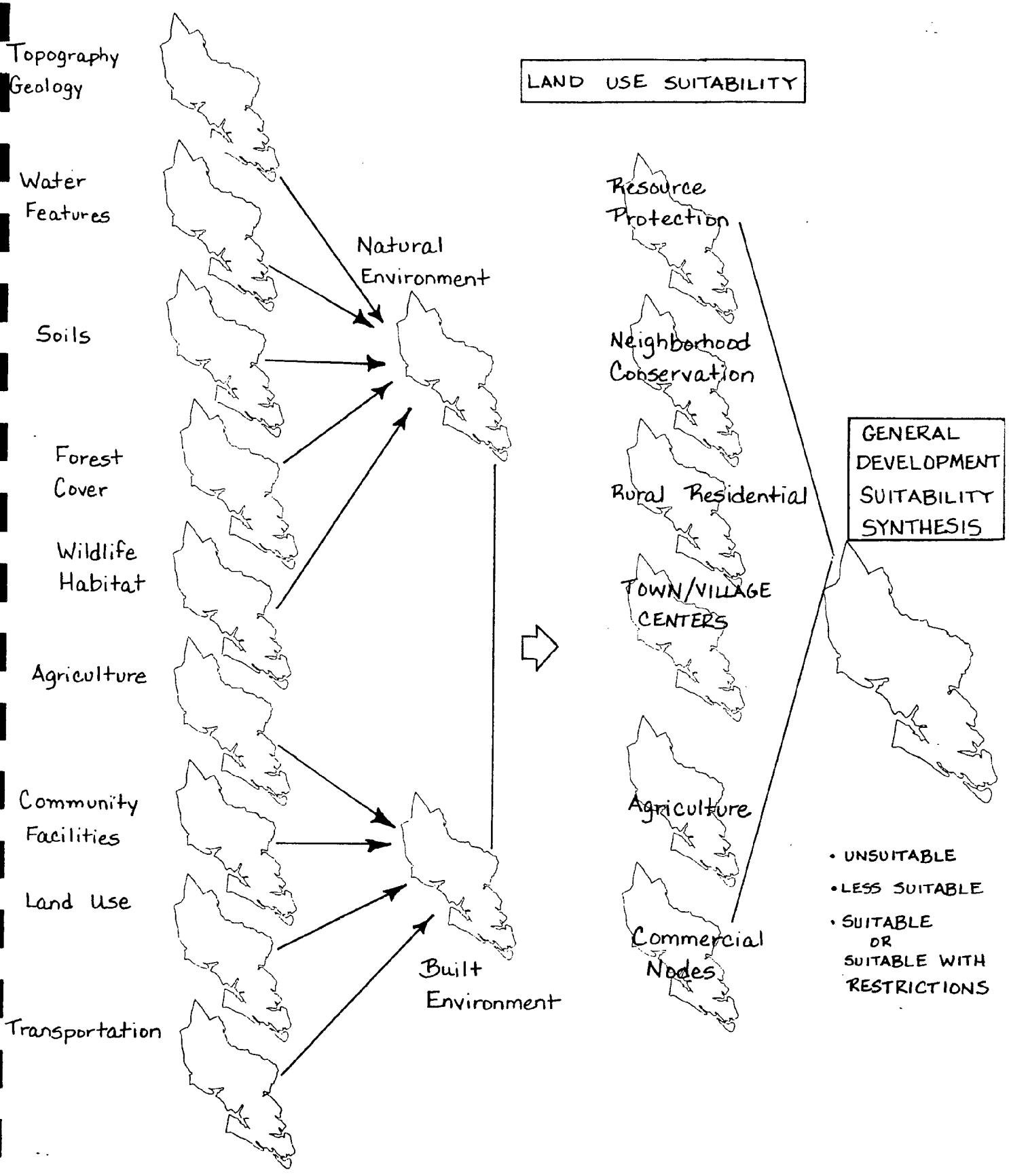


Figure II-1

Cobb Neck a commodity. Their value to both protection of the water quality of the bay and the rural environment of the County, however, suggests that they require protection particularly in areas to be developed for suburban residential densities, or commercial, office or industrial uses.

Because of the widespread occurrence of highly erodible soils and soil with high runoff potential in Cobb Neck, areas with slopes of 8% to 15% and of 15% or more require special care in farming and in the development process and slopes of 25% or more are best left in dense vegetation as natural parks. Threatened or endangered species and species in need of conservation are severely threatened by uses at the higher end of the density and intensity range and are best protected by designation as natural parts.

Step 2 Identification of Conditions that Preempt Land from Development

The second step was to identify those conditions that virtually preempt land from development. Two such conditions were identified. The first condition is lands that are already developed. The second is a set of environmental characteristics that represent such natural value, fragility, susceptibility to damage from encroachment and importance to maintenance of the quality of the Chesapeake Bay that it is recommended that lands with these characteristics be retained in their natural state.

The characteristics recommended for this preservation category include:

-- A 25 foot buffer area adjacent to all non-tidal wetlands and streams and a 100 foot buffer adjacent to all tidal wetlands;

-- 100 year floodplain;

-- Tidal and non-tidal wetlands and marshes;

-- Bottomland Hardwoods;

-- Habitats of Threatened and Endangered Species (Including Natural Heritage Areas and MET easement areas); and,

-- Slopes greater than 25 percent.

It should be noted that these characteristics are only those requiring the greatest degree of protection. Other conditions that warrant conservation measures are described in Part I, Section F, Natural Resources and Physical Characteristics.

The conditions recommended for the preservation category are generally protected by State and, in some cases, Federal legislation, or are indicative of conditions that are so protected. While there are circumstances under which some such areas might be able to be developed, the abundance of land in Cobb Neck is much better suited for development and amply able to accommodate foreseeable future growth argues strongly for their protection. Lands recommended for the preservation category are illustrated on the Development Suitability Synthesis Map.

Step 3 Identification of Use Categories for Suitability Testing

The third step was to identify categories of use types for suitability testing. Based on the findings of step one, it was determined that land use suitability testing for Cobb Neck could be grouped effectively in six major categories on the basis of shared suitability characteristics:

-- Agriculture;

-- Rural Residence (one unit per five acre or higher);

-- Neighborhood Conservation (existing suburban type densities);

-- Town/Village Centers (residential development at densities higher than 0.33 dwelling units per acre, commercial, office and institutional). services);

-- Resource Protection Areas/Natural Parks; and,

-- Highway Commercial Nodes (commercial, office, institutional and light industrial)

For each of the six suitability categories, rankings were established of the relative suitability for development of all remaining lands in Cobb Neck, that is, lands that are neither presently developed, nor recommended for preservation in their natural state. The most and least conducive conditions for each category were identified, together with sets of conditions that could permit the uses under consideration, but might require special protective measures. Rankings incorporated those built environmental or settlement features identified through technical analyses and goal formulation to be essential determinants of development suitability: areas presently served and planned to be served with public sewer and water, and major roadway systems and intersections. Using this method, rankings of most suitable, conditionally suitable, and less suitable were established for each use category.

The following pages present the factors that were used to determine relative degrees of suitability for each of the six categories. They illustrate the way in which the various environmental features combine to determine the degree of suitability of each area of the Study Area for the various developed use categories. They show, for example, that a condition of having soils with severe limitations for onsite results in a ranking of "less suitable" for Rural Residential development but not for agricultural use. Likewise, town development would not be constrained since that class includes central sewer areas.

RURAL RESIDENTIAL SUITABILITY-ANALYSIS

EXISTING DEVELOPMENT

RECOMMENDED PRESERVATION

25' buffer, non-tidal wetlands and streams
100' buffer, tidal wetlands
100 year flood plain
Wetlands, tidal and non-tidal
Marshes, tidal and non-tidal
Bottomland Hardwood Woods
Riparian Areas
Water bodies
Habitats of Threatened and Endangered Species
Natural heritage areas
MET easement areas
Slopes >25%

LESS SUITABLE

Resource Conservation Areas
Areas with severe limitations for onsite sewer
<1' Depth to Seasonal High Water Table
15% or greater slopes

SUITABLE WITH CONDITIONS THAT MAY REQUIRE PROTECTIVE MEASURES

Proximity to habitats of species in need of conservation
Mixed Hardwood Woods
Pine Types Woods
Highly and Very Highly Erodible Soils
Anadromous Fish Spawning Stream Watersheds
Shore areas with significant erosion
Areas adjacent to submerged aquatic vegetation

MOST SUITABLE

Limited development areas within 1000' of head of tides
Residual unconstrained areas

RURAL VILLAGE SUITABILITY-ANALYSIS

EXISTING DEVELOPMENT

RECOMMENDED PRESERVATION

25' buffer, non-tidal wetlands and streams
100' buffer, tidal wetlands
100 year flood plain
Wetlands, tidal and non-tidal
Marshes, tidal and non-tidal
Bottomland Hardwood Woods
Riparian Areas
Water bodies
Habitats of Threatened and Endangered Species
Natural heritage areas
MET easement areas
Slopes >25%

LESS SUITABLE

Resource Conservation Areas
Areas with severe limitations for onsite sewer
<1' Depth to Seasonal High Water Table
15% or greater slopes

SUITABLE WITH CONDITIONS THAT MAY REQUIRE PROTECTIVE MEASURES

Proximity to habitats of species in need of conservation
Mixed Hardwood Woods
Pine Types Woods
Highly and Very Highly Erodible Soils
Anadromous Fish Spawning Stream Watersheds
Shore areas with significant erosion
Areas adjacent to submerged aquatic vegetation

MOST SUITABLE

Limited development areas within 1000' of head of tides
Residual unconstrained areas
Existing rural service centers

COMMERCIAL NODE/TOWN CENTER SUITABILITY-ANALYSIS

EXISTING DEVELOPMENT

RECOMMENDED PRESERVATION

25' buffer, non-tidal wetlands and streams
100' buffer, tidal wetlands
100 year flood plain
Wetlands, tidal and non-tidal
Marshes, tidal and non-tidal
Bottomland Hardwood Woods
Riparian Areas
Water bodies
Habitats of Threatened and Endangered Species
Natural heritage areas
MET easement areas
Slopes >25%

LESS SUITABLE

Resource Conservation Areas
Areas with severe limitations for onsite sewer
<1' Depth to Seasonal High Water Table
15% or greater slopes

SUITABLE WITH CONDITIONS THAT MAY REQUIRE PROTECTIVE MEASURES

Areas with slight or moderate limitations for on-site sewer
Proximity to habitats of species in need of conservation
Mixed Hardwood Woods
Pine Types Woods
Highly and Very Highly Erodible Soils
Anadromous Fish Spawning Stream Watersheds
Shore areas with significant erosion
Areas adjacent to submerged aquatic vegetation

MOST SUITABLE

Intensely Developed Areas within 1000' of head of tides
Residual unconstrained areas
Areas presently sewered or planned for sewer service

NEIGHBORHOOD CONSERVATION SUITABILITY-ANALYSIS

EXISTING DEVELOPMENT

RECOMMENDED PRESERVATION

25' buffer, non-tidal wetlands and streams
100' buffer, tidal wetlands
100 year flood plain
Wetlands, tidal and non-tidal
Marshes, tidal and non-tidal
Bottomland Hardwood Woods
Riparian Areas
Water bodies
Habitats of Threatened and Endangered Species
Natural heritage areas
MET easement areas
Slopes >25%

LESS SUITABLE

Resource Conservation Areas
Areas with severe limitations for onsite sewer
<1' Depth to Seasonal High Water Table
15% or greater slopes

SUITABLE WITH CONDITIONS THAT MAY REQUIRE PROTECTIVE MEASURES

Proximity to habitats of species in need of conservation
Mixed Hardwood Woods
Pine Types Woods
Highly and Very Highly Erodible Soils
Anadromous Fish Spawning Stream Watersheds
Shore areas with significant erosion
Areas adjacent to submerged aquatic vegetation

MOST SUITABLE

Limited development areas within 1000' of head of tides
Residual unconstrained areas
Existing suburban scale developments

AGRICULTURE SUITABILITY-ANALYSIS

EXISTING DEVELOPMENT

RECOMMENDED PRESERVATION

25' buffer, non-tidal wetlands and streams
100' buffer, tidal wetlands
100 year flood plain
Wetlands, tidal and non-tidal
Marshes, tidal and non-tidal
Bottomland Hardwood Woods
Riparian Areas
Water bodies
Habitats of Threatened and Endangered Species
Natural heritage areas
Slopes >25%

LESS SUITABLE

<1' Depth to Seasonal High Water Table
15% or greater slopes

SUITABLE WITH CONDITIONS THAT MAY REQUIRE PROTECTIVE MEASURES

MET easement areas
Resource Conservation Areas
Proximity to habitats of species in need of conservation
Mixed Hardwood Woods
Pine Types Woods
Highly and Very Highly Erodible Soils
Anadromous Fish Spawning Stream Watersheds
Shore areas with significant erosion
Areas adjacent to submerged aquatic vegetation
8-15% slopes

MOST SUITABLE

Residual unconstrained areas
Prime soils
Existing farms

RESOURCE PROTECTION AREAS SUITABILITY-ANALYSIS

EXISTING DEVELOPMENT

LESS SUITABLE

Areas with existing or planned sewer or water service
Neighborhood Conservation Areas

CONDITIONALLY SUITABLE

Pine Hardwoods

RECOMMENDED PRESERVATION MOST SUITABLE FOR NATURAL PARKS

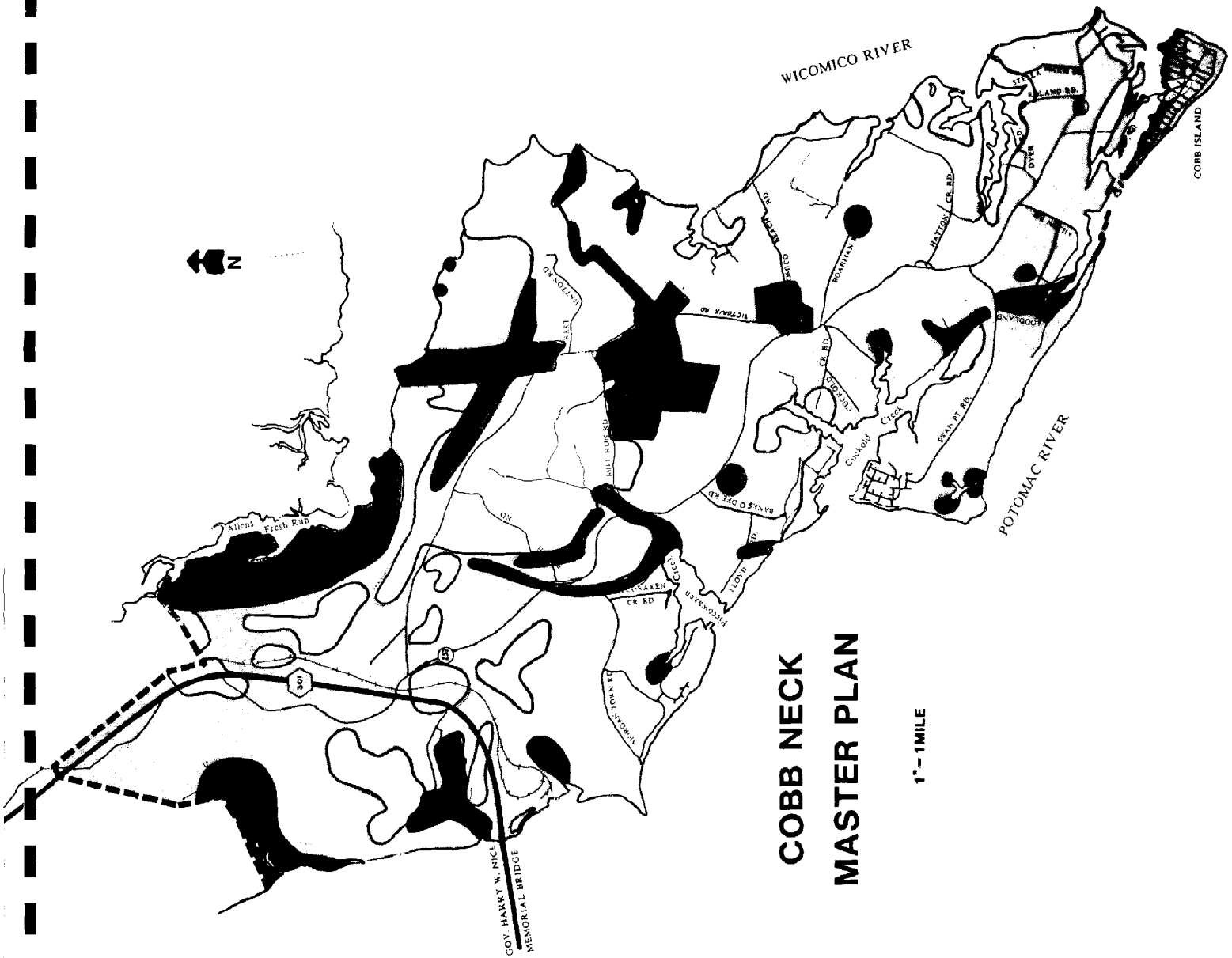
25' buffer, tidal wetlands and streams
100' buffer, tidal wetlands
100 year flood plain
Wetlands, tidal and non-tidal
Marshes, tidal and
Bottomland Hardwood Woods
Riparian Areas
Water bodies
Habitats of Threatened and Endangered Species
Habitats of species in need of conservation
Resource conservation areas within 1000' of high tides
Natural Heritage Areas
MET easement areas
Slopes >25%

Findings

The suitability synthesis shown on Map II-1 brings together the findings of the six suitability analyses as a basis for the plan. The pattern that emerges strongly supports the growth concept for Cobb Neck developed during goal and policy formulation and Plan Section of this plan. As is apparent from a review of the Suitability Synthesis, Map II-1, some areas of the County are well-suited for more than one use. The suitability synthesis adds considerable detail to the basis for the treatment of the Neck in its differentiation between areas suited for agricultural preservation, for rural residential use and for village and town development. development. The Suitability Synthesis is a process of establishing priorities among uses. Highest suitability is determined on the basis of the following considerations. Town development densities and intensities of use are recommended to be limited to areas presently served or proposed to be served with public sewer and water. Preservation areas are uniquely and particularly suited for natural park use or permanent open space. Remaining areas of the Neck are proposed to be retained at agricultural and rural densities and intensities excepting special uses such as commercial recreation and marinas, and major crossroads villages, discussed below.
The following integrates these suitability findings with consideration of the location and patterns of existing land uses and presents recommendations concerning each major land use category.

Resource Preservation

The resource preservation category includes all lands with any of the identified factors recommended for preservation from development. These areas occur throughout the Neck in and near developed areas, including the County's most intensively developed areas, such as Cobb Neck, Swan Point and Cliffton, as well as in the agricultural and rural areas of the County. Preservation of these areas in natural vegetated open space through the site review process can significantly enhance the visual quality of the region's landscape and the health of the natural environment. Retention of wooded creeks as natural open space within town development areas can greatly improve community appearance. In rural areas, agricultural use may be appropriate in these areas subject to the land management practices recommended in County's Critical Area Program.



MASTER PLAN

COBB NECK

CHARLES COUNTY, MARYLAND

DEVELOPMENT SUITABILITY SYNTHESIS

- **UNSUITABLE**
- **LESS SUITABLE**
- **SUITABLE OR SUITABLE WITH RESTRICTIONS**

MAP II-1

Rural (Agricultural) Preservation

The rural preservation use category includes all areas of the County identified as well suited for agriculture, those areas presently in active farming, and those areas presently in rural use that are not well suited for residential or other more intensive development. These areas are proposed to be preserved at densities not to exceed one dwelling unit per five acres. Through a system of incentives including agricultural districts, development rights dedication and transfer of development rights, the goal of the plan will be to preserve as much of this area as possible in parcels of twenty acres or more, particularly on lands well-suited for agricultural use.

Rural Residence

This use category includes all lands areas not served by public sewer that present few if any constraints for on-site sewer systems. These areas are particularly well-suited for rural residential development at densities of from one dwelling unit per three acres up to two dwelling units per acre where soil conditions permit. These areas are recommended for clustering of single family detached residences, with surrounding lands retained in agricultural use and open space.

Village Centers

Rural village service centers would be permitted within and immediately adjacent to existing villages, such as Newburg, Thompkinsville, Wayside and Mt. Victoria. The concept of the village service center is created to provide designated areas for limited future growth and development on Cobb Neck which may not be absorbed within the Town Center or Highway Commercial nodes.

Neighborhood Conservation Areas

Neighborhood Conservation Areas includes areas of the Study Area presently developed at medium to high densities (greater than would be permitted in the rural preservation or rural residential areas) outside areas proposed for Town development. While the plan recognizes the County's commitment to approved subdivisions in such areas, it is not the County's intent to encourage additional development at similar densities outside of Town development areas or crossroads villages. The Cliffton subdivision falls into this category of future growth.

Town Development

As discussed under the Suitability Analysis and Synthesis above, Town Development densities and intensities are recommended to be limited to areas in and adjacent to those that are presently served or proposed to be served with public sewer. These uses include residential densities of four or more dwelling units per acre, general commercial uses, office and major institutional uses. The Cobb Island Sewer service area offers the best opportunity for Town Center type of development.

Highway Commercial Nodes

Highway commercial uses are recommended to be limited to major intersections such as Glasva and Newburg. Commercial uses are proposed to be limited to development parcels of five acres or more in order to achieve coordination of development and shared access points and to prevent multiple access points onto the County's arterial road system. Commercial development prototypes illustrating the design and access efficiencies and amenities that can be achieved with the application of this principle are illustrated in the Land Use Plan.

D. Current and Projected Traffic Volumes

Under average daily traffic conditions most of the local roads in Cobb Neck region are expected to operate at acceptable levels of service (C or better) within the planning horizon. Table II-5 shows the growth of traffic volumes on Cobb Neck's major roadways. As can be seen, since 1983, traffic volumes on these routes have increased at rates between 2.7 and 5 percent annually. Each segment of roadway showed steady increases each intervening year.

The main concern is the impact that the Swan Point developments will have on Route 257 as the route approaches the Rt. 301 intersection. Assuming the planned 1929 units will be built by year 2005 and a continued increase in traffic from the remainder of the Neck will occur, Rt 257 will drop to a level of service E at the Newburg section. Assuming a 80/20 trip assignment, 12,191 trips per day will be added by Swan Point alone. It is likely that the intersection at Rt. 257 and Swan Point Rd. will require signalization. Assuming the build out of Swan Point will be substantially complete by year 2000, RT. 257 will fall below Level of Service C acceptability early in the 1990s. This allows time for concentrating road improvements on the numerous no passing zones that will likely cause the first signs of unacceptable service levels. Ultimately upon build out of Swan Point a dual lane rural road will not service the region at acceptable levels.

Table II-5
Traffic Trends

Route	1983 Yearly Average Daily	1986 Yearly Average Daily	2005 Projected Average Daily	Existing Capacity Level C
U.S. 301	15050	17000	29350*	34,000
MD. 257				
Newburg	3650	3950	18041**	5,200
T-ville	2000	2300	16391**	5,200
Rock Pt.	700	800	1430*	5,200
MD. 234	2425	2900	5275*	5,200
MD. 254	1300	1500	2754*	7,900

*Projections assume same annual increases in ADT as recent years since 1983.

**Projections assume same annual increases in ADT as recent years since 1983 plus planned development on Swan Point.

Although capacity and level of service measures are not the only indicators of potential highway needs (safety being another important consideration) the above analysis does provide a basis for evaluating the adequacy of highway facilities in the future. In, summary significant improvements will be necessary to plan for the future traffic related to the Swan Point Development.

E. Community Facilities

Public Water and Sewer Facilities

The provision of sewerage and sewage disposal facilities is one of the most powerful growth management tools available to County policy makers. This is especially true on Cobb Neck, where so much of the desirable residential property is unsuitable for development on septic tank disposal systems. The ability of the region to grow depends, to a large extent, upon provision of economical sewer service. The current County policy of to concentrate all new development in the Mattawoman Sewer Service area and to minimize the use of individual package treatment plants brings additional focus to how the existing and planned treatment facilities in the region should be managed. Since Swan Point, Cobb Island and Clifton are likely to be the only sewer service areas in the study area, they should be sized and designed to adequately handle planned development requiring central sewage disposal. Infill development is an issue in on Cobb Island and in Clifton.

Under the current design for the Cobb Island System, capacity does not exist for potential infill lots and properties or additional commercial uses. Current design capacity is 150,000 gpd and ultimate demand would be 210,000 gpd. The actual absorption rate of the land application sites may yield additional capacity; however, this is not likely.

Cobb Neck relies solely on ground water for its potable water supply. The ground water resources within the Neck are capable of meeting the expected demand for the year 2005. However, ground water resources available have limitations for small diameter wells and centrifugal pump systems as stated earlier in this plan and can be drawn down considerably when high density development such as Cobb Island exists. The widespread problem of failing wells offers opportunities to address the economic need comprehensively either by a central water system or by financial assistance to those residents unable to solve this health and sanitation problem individually.

Projected Recreational Demands

Based on standards accepted in the field of parks and recreation planning, Appendix D was generated to project future needs for facilities and services. Using scenario 3 population projections, the region will be adequately served by the existing facilities inventoried.

PART III

IMPLEMENTATION OPTIONS AND ANALYSIS

Part III provides an analysis and evaluation of alternative implementation strategies addressing the overall issues deemed most critical to Cobb Neck: Growth Management, Resource Protection; and Agricultural Preservation. This part consists of independent Implementation Options Papers to cover these areas of concern.

IMPLEMENTATION OPTIONS PAPER:
GROWTH MANAGEMENT

COBB NECK

INTRODUCTION

There are several basic types of growth management, each having a different theme or objective. One theme is growth rate control, in which the community seeks to influence the rate and/or type of growth. A second theme is one in which it is the location of the growth that is to be controlled. The last major theme is related to the cost of the development: Is it profitable? Who pays for development related costs? Frequently, the community is concerned with several of these basic themes.

For the most part, the need to control the rate of growth is due to the inability of the community to provide facilities, such as sewers, schools and highways, necessary to meet projected demand. In Cobb Neck, there is certainly a concern over financing needed improvements. That concern is primarily related to the fear that current residents will have to pay for growth. There is concern that the rate of growth in Cobb Neck is outstripping the County's ability to provide such services as recreation, fire and rescue, police and sanitation in the extreme southern part of Charles County. Cobb Neck residents have expressed a desire for library services and potentially a High School.

Clearly, there is a real need to coordinate land use decisions in order to efficiently extend sewer service. Thus, coordinating land use planning with sewer service extension is a primary objective of the plan. Also of concern is the provision of sewer service outside of Cobb Island. Lastly, the desire to preserve the Area's agricultural land and environmental resources is a closely related issue. Water quality and habitat protection ranks high among the concerns of the residents. Thus, all three of these needs require a means of controlling the location of growth in Cobb Neck.

The cost of providing service is important, but is only a part of the problem. There is also a need to not only expand or extend services but to upgrade services. The provision of sewer services has been a traditional method of controlling growth and generally requires a commitment to providing these services. A second related issue is the need not only to expand services to keep pace with the new development, but to upgrade the level of service. As a rural county grows, it eventually reaches the point where a different level of service is required as was reflected by residents at the Planning Workshop. All of these development related costs must be paid for and the question of who pays is an issue upon which most citizens and elected officials have focused their attention.

GROWTH PROJECTIONS

What are the dimensions of growth facing Cobb Neck? In this section, we have outlined the basic assumptions about the growth which the Cobb Neck Growth Management Plan must accommodate.

Population Growth

The amount, distribution and timing of population growth and development are elements that a growth management discussion must address. These factors, in turn, determine the cost of providing the facilities needed to support the new population and also determine non-residential growth of the County. Cobb Neck has grown steadily during the past several years and this growth is expected to continue into the year 2005. (See Table 1)

TABLE 1
POPULATION PROJECTIONS
COBB NECK

	Scenario 1	Scenario 2	Scenario 3	Charles County
1970	2602	2602	2602	47,678
1980	3423	3423	3423	72,751
1987 (Sept)	3779	3779	3779	93,160
1990	3981	4071	4319	100,200
1995	4234	4549	6344	111,200
2000	4487	5027	7694	120,400
2005	4742	5505	9044	128,700

Population forecasts prepared by RJA employ two growth scenarios. Scenario 1 assumes a straight line projection from 1970. Scenario 2 takes into consideration the recent increases in building during the past five years and assumes that trend will continue by projecting that trend to the planning horizon. Scenario 3 takes into consideration the current build out of Swan Point, as well as, the potential build out of the WPC section. is also assumes market conditions continue to be favorable. Scenario 1 projects a total increase of approximately 963 or a 25 percent increase by 2000. Scenario 2 projects a total increase of approximately 1726 or a 46 percent increase by 2000. This scenario is consistent with the overall growth projections of the County. According to the Maryland Department of State Planning forecasts, the County's population will increase by approximately 35,540 in the next 17 years or 38 percent. Finally, scenario 3 results in a population increase of 5,265 or 139 percent which would indicate a strong need for growth management.

TABLE 2
HOUSING UNIT PROJECTIONS
COBB NECK

	Scenario 1	Scenario 2	Scenario 3
1970	1172	1172	1172
1980	1398	1398	1398
1987 (Sept)	1530	1530	1530
1990	1605	1638	1730
1995	1699	1815	2480
2000	1793	1992	2980
2005	1887	2169	3480

TABLE 3
PROJECTED CHANGE IN POPULATION
COBB NECK

	Scenario 1	Scenario 2	Scenario 3	Charles County
1987-90	5.3	7.7	14.3	7.6
1990-95	6.3	11.7	46.9	11.8
1995-2000	6.0	10.5	21.3	8.3
2000-2005	5.7	9.5	17.5	6.9

Table 3 indicates the projected changes in population by five year increments. Again, scenario 2 produces growth rates comparable to the County. Even averaging the two scenarios indicates significant demand to year 2005. Based on the recent building permits issued the growth seems to be concentrated in Clifton or Swan Point.

TABLE 4
LAND CONSUMPTION OPTIONS TO SATISFY
PROJECTED DEMAND FOR HOUSING UNITS

		ACRES NEEDED				
	Additional Units	0.5 acre Lots	1 acre Lots	3 acre Lots	5 acre Lots	20 acre Lots
SCENARIO 1	357	179	357	1071	1785	7140
SCENARIO 2	639	320	639	1917	3195	12780
SCENARIO 3	1950	975	1950	5850	9750	39000

Table 4 follows from Table 2 showing Housing Unit Projections and indicates the amount of land needed under several lot size scenarios. This simple analysis illustrates the relationship between minimum lot sizes and amount of land that is converted from farm and forest to residential use. The larger lot configurations also consume more land for road networks and have a greater potential to disrupt viable farming operations and

habitat areas. The degree to which these projected land areas will impact on farmland and sensitive natural resources depends to a large degree on the policies that evolve from this plan and the platted lots existing on the Neck.

An evaluation of existing parcels on the Neck has revealed a significant number of vacant parcels estate size or smaller which could absorb the projected demand for residential units. Approximately 584 parcels were determined to be vacant based on the land use survey performed by the County Office of Planning during the summer of 1984. Based on the experience of the County Health Department in the various areas of the Neck about 40 of those lots have a good potential to receive approval for onsite sewage disposal. Some 500 lots are considered vacant on Cobb Island which could become buildable once the sewer system is installed. A realistic number based on a minimum lot size of 15,000 square feet would be 20 to 30 home sites. Also approximately 370 lots are available in Clifton which are contingent on sewer service availability. Finally, there are approximately 350 lots platted in the Swan Point R-15 Section.

THE ISSUES

The population projections indicate that the Study Area can expect an increase in population of up to 1726 or a 45 percent growth by the year 2005. The Cobb Neck Resident's Workshop to date has indicated that the following growth management objectives are consistent with the identified concerns:

1. Future growth should be concentrated in areas of the Neck already served or proposed to be served with public water and sewer, primarily the existing waterfront planned community, Swan Point, Clifton and the Cobb Island Service Area.

2. Other areas of the Neck should be designated generally for the rural development densities and agriculture.

3. Existing crossroads villages should provide services for surrounding rural and agriculture areas. Growth and further development of these villages should respect their unique community and historic character.

4. Use of the Neck's abundant waterfront should balance the important considerations of environmental protection and enhancement of the value of waterfront as a recreational resource.

5. Commercial uses should be concentrated at appropriate nodes along the Rt 301 corridor, and secondarily in the crossroads villages. Scattering of commercial uses along the County's major roads should be prohibited.

6. Future industrial and office uses should be encouraged to locate in and near existing industrial areas in the Morgantown area.

7. Community service centers and facilities should be concentrated in and near the region's sewer service areas, while future passive parks and open space should be established on sensitive environmental lands, as a means of preserving them.

8. Preserve and enhance the rural character and associated quality of life.

9. Insure the adequate distribution of County services such as police, fire and rescue, library, recreational and educational facilities on Cobb Neck.

10. Channel waterfront development into existing or planned waterfront communities.

11. Permit Waterfront Planned Communities only in areas suitable for water dependent facilities and residential development.

The implications of these objectives are that the growth management goal of the region is to accommodate future population within the range of the current projections and that the platted lots and planned development in the areas currently served by sewer will be the primary location for much of the population and
housing growth expected on the Neck during the planning period and that the village centers will accommodate a smaller portion of the expected growth.

Traditional planning theory suggests that development occurs around those towns or development centers with sewer service, a theory that makes sense in many areas but may not work in Cobb Neck. If, as we suspect, growth trends in the Waterfront Planned Communities continues, a substantial portion of the region's future growth will want to locate on the water where no major new sewer service or sewer expansions are currently planned.

The growth trend of recent development on the Neck is undoubtedly being driven by exurban growth of the Washington D.C. metropolitan area, a trend pronounced throughout the Southern Maryland Region. The 1980 Census reveals a significant portion of the area's work force (37%) journeying to the Metropolitan area to work. If this growth trend is to be accommodated, without major investment in sewer service facilities or strict land use controls, the result could well be the form of suburban sprawl one now witnesses in other parts of the region. Large lot rural zoning districts would only add more impetus to the tendency for development to sprawl, in that a couple of acres in the country is often exactly what the ex-urbanite moving to Cobb Neck desires. As was once said, "when everyone moves to the country, it is no longer country." Large lot zoning may result in a form of rural estate development that encourages higher value housing, thus ensuring that the assessed value of homes covers public costs, however the resulting pattern of development runs counter to many of the objectives of the residents, namely retaining the rural character of the area and preserving agriculture. Attempting to

accommodate this growth along highway corridors as is commonly done, will mean that the corridors will become a continuous strips of housing and commercial development beyond which one would have to travel to experience the "rural" character of Cobb Neck.

The residents of the Neck are sensitive to the possibility of becoming a "bedroom community" which has implications for public costs and revenues. Clearly the County's economic development programs will have to address ways of offsetting imbalances in the resident population versus the jobs formula if it is to keep industrial and commercial ratables at a level that enables them to provide adequate public facilities and services without substantial increases in County taxes.

Growth in the sewer and water service areas such as Cobb Island, Clifton and Swan Point can be managed more easily along traditional lines. The issue is to ensure that public services and facilities and the highway systems keep pace with the conversion of land in these areas from rural to suburban development. The challenge for the County is to retain those elements of rural character that are considered desirable in these areas while recognizing that the overall character of the area will become suburban.

Several major cross roads villages are identified as performing a number of functions in the growth management scheme, including centers for rural residential development and commercial service centers for rural areas. Some of these include: Wayside, Tompkinsville, Mt. Victoria and Newburg. The ability of the village centers to accommodate some portion of the future growth of the area and still retain there unique character may well be called into question, particularly in the northern part of the Neck if development is permitted to sprawl out around them and along the highway corridors.

In summary, the issues facing the Committee as they consider growth management are as follows:

1. In light of the agriculture preservation objectives of the Committee how to accommodate future growth, minimize pressure for conversion of agricultural lands and prevent a residential sprawl throughout Cobb Neck.

2. How to achieve the County's growth <u>location</u> objectives if a substantial portion of future growth wants to be locate outside of the designated growth centers in the Mattawoman Sewer Service Area to the north.

3. How much growth can be absorbed in and around the village centers and how many viable growth centers.

4. How to retain the unique identity of the village cross road centers while accommodating new growth in these areas.

5. How to ensure that the capacity of public infrastructure is adequate at the time it is needed in the designated growth centers.

6. How to most efficiently provide for public improvements for new development.

IMPLEMENTATION ALTERNATIVES

Several alternative approaches are available to Charles County as it faces the issues of managing growth on Cobb Neck and countywide. The alternatives range from traditional zoning techniques that regulate the intensity of development to more flexible performance standards. Yearly permit allocations and population caps are tools which place an absolute limit on growth. These, however, are more difficult to defend and may not achieve the desired end.

The residents of Cobb Neck and ultimately the elected officials of Charles County must carefully weigh the costs and benefits of each of the following growth management techniques. For each alternative, one or more groups must pay the costs associated with controlled growth. A technique which has worked particularly well in some other county may be politically unacceptable in Charles. Other alternatives may be viewed as potentially more effective within the County.

No single growth management alternative can work in isolation. Each approach has its strengths and weaknesses and must be combined with other techniques in order to insure the development of an effective and politically acceptable growth management plan for Cobb Neck. The following techniques will be reviewed:

Large Lot Residential Zoning
Density and Intensity Regulations
Development Districts
Performance Standards: Quality of Site Design
Performance Standards: Environmental protection
Capital Programming
Exaction Fees
Impact Analysis
Population Cap
Development Permit System

A. Large Lot Residential Zoning

Large Lot residential zoning is the classic method of reducing both the amount and rate of growth. The Critical Area Law recently passed by the Maryland State Legislature uses 20 acre zoning to limit development in resource conservation areas located within 1,000 feet of the shoreline. As can be seen in Table 4 of this paper, the real weakness of this approach is it "eats up" the land. Even a moderate form of large lot zoning, for

example 2 to 5 acre lots, would consume up to fifteen times as much land as smaller lot residential zoning. Thus, while it may reduce population growth, large lot zoning has always resulted in an accelerated loss of rural land and increased sprawl.

Large lot zoning has been seen as desirable by some communities because it preserves the semi-rural character of an area. However, due to the fact that the homes are distant from each other, it is very costly for the county to provide services to the residents of these developments. Everything from school bus routing to garbage collection becomes more expansive on a per household basis. It also increases the price of housing so that only the more affluent can afford to move in, a factor that does much to explain its popularity.

Large lot zoning is also relatively ineffective at protecting environmentally sensitive lands. Large lot subdivisions depend on septic tanks for waste disposal and require extensive and lengthy road networks to serve lots spread throughout a land area. Moreover, the spreading out of home sites makes it difficult to preserve vegetation and habitat values that may exist on the site. Homeowners of 2 to 5 acre lots frequently seed large expanses of lawn and then apply fertilizers and herbicides in order to maintain the lawn. The runoff from these lots can significantly affect the quality of nearby bodies of water.

B. Density and Intensely Regulations

Density and intensity regulations control growth by regulating the number of units which may be built on a particular site or by regulating the intensity of that development. Zoning is the traditional technique used to set density and intensity standards. Density standards are typically applied to residential development, where growth is managed by limiting the number of homes which may be built per acre. Intensity standards are more often applied to commercial, office, and industrial developments and related to the bulk and height of buildings permitted in a particular area.

Density standards can also be used to encourage growth in areas where adequate public services exist. Moderate density residential zoning in areas designated for development would encourage small lot single family units and some multi family units. However, this is true only if there is access to adequate sewer and water at a reasonable cost to the developer. This has been a problem in Cobb Neck in the past; the availability of sewer has not supported the development goals as shown in the zoning map. This is probably good since the current zoning on Cobb Neck is largely inconsistent with the objectives identified by the residents.

The zoning map serves as an additional tool that can be used to regulate growth. It indicates the appropriate land use for parcels and areas of land throughout the County. The problem inherent in the zoning map is that it is too easy to make incremental changes. Changes in zoning are permitted in the interest of fairness and hence, changes in the

proposed development are permitted. Even though adequate land area may be zoned for moderate to high density residential development, such development may end up being scattered throughout the County if too many amendments to the zoning map are permitted. Fortunately, the "change or mistake" rule of the State of Maryland does help to curb the requests for rezoning. Most importantly, if sufficient lands are designated, and these properties are sewered, then it is a very effective growth management technique.

Intensity is a broader standard of measurement than density. The intensity of a building or a development parcel of land refers to the impact it has on neighboring land uses. The greater the intensity of development, the greater the impact and potential for nuisances. For example, greater intensity may result in decreased open space, increased runoff from paved surfaces, increased bulk and height of buildings, increased traffic with associated noise and congestion, increased exterior lighting visible from neighboring property and other nuisances.

A wide range of intensity standards exist, including floor area ratio, impervious surface ratio, building height, amount of exterior storage, hours of preparation, and total trips per acre per 24 hours. Stricter intensity standards will result in greater control of the overall development, but unless the community can resist granting zoning changes or variances, it will not effectively control growth.

The primary advantages of density and intensity regulations are that they are well accepted as traditional planning tools. They are easy to interpret and implement, and are moderately effective in controlling growth. The principal disadvantage is that there is little or no control over the quality of development that occurs. The standards are largely quantitative and thus regulate numbers but not character.

In order for density and intensity standards to work as growth management tools, there must be large expanses of land that remain in farmland, where no development is planned for the foreseeable future. Owners of the land zoned in this way may feel that their land values have been unfairly restricted. This "taking issue" was discussed in the agriculture paper. Public acceptability of this approach depends upon how fairly and uniformly it is applied throughout the County. If landowners perceive that the density and intensity standards have been applied as part of an overall growth management plan, then they probably will be willing to support them. If the standards are used in isolation, they may be very ineffective at controlling and regulating growth.

Environmental performance standards are more effective at controlling growth than site design performance standards, because they set definite limits on the development of environmentally sensitive lands. In an area such as Cobb Neck, where there is an extensive amount of coastal areas, wetlands, stream valleys and agricultural lands, the impact of environmental performance standards on the location of development may be significant.

C. Development Districts

Development districts are based on the premise that new development can be serviced most efficiently if it is limited to certain areas within a county. The projected 20 year increase in population for a particular area can be used as a guide in determining how much land should be planned for this type of district. While it is possible to use shorter time periods, this greatly complicates the planning and implementation of this concept. When applied and implemented properly, development districts permit the efficient use of land and discourage urban sprawl. As was emphasized in the previous section, development districts require access to sewer. Without adequate sewer capacity, one acre lots on septic will begin to sprawl across the countryside. The one great failing of this concept has occurred when the community does not sewer the development area.

Development districts are designated as part of an overall growth management plan. Usually, they are mapped out for areas that have excess capacity in terms of capital improvements and services. They may also be designated for those areas where service and capital improvements are planned. The development district permits medium density residential development as well as commercial, institutional and some industrial uses.

A key issue relates to how much land should be mapped for this district. The amount of land designated for development must be sufficiently large in order to insure that a small number of landowners cannot manipulate the market place and drive up prices. Prices are most likely to be driven up when the planning period is short or where the total area needed to accommodate expected development is small. In Cobb Neck, development districts may be considered in the areas around Clifton and Cobb Island. It is essential that these areas be provide with adequate sewer if they are to develop at the intensities necessary to manage and define growth within the County.

Administratively, development districts are relatively easy to implement. Either traditional zoning or performance zoning may be used to regulate the type of growth that takes place within the districts. The key to the success of development district is in the availability os services and capital improvements. There must be adequate sewerage capacity, water, roads and schools in order for the districts to accommodate the anticipated growth. For example, the feasibility of development districts in Cobb Neck may be limited by the capacity of the County to provide adequate sewer capacity where it will be needed and does not now exist.

One of the key concepts of the development district is to concentrate development in one or a few areas in order to make efficient use of the services and infrastructure that are available or that are planned for consideration. If residential subdivisions, shopping centers, and industries are permitted to randomly locate throughout the region, then it will be extremely costly to extend the necessary services out to all of the developments.

In general, environmental performance standards tend to assist efforts taken through the use of development districts to control and curb urban sprawl. These regulations set definite limits on the development of environmentally sensitive lands. Since development districts are primarily a locational control, the location of resources in need of protection may be critical. Since there is an extensive amount of coastal areas, wetlands and agricultural lands in St. Mary's, the impact of environmental performance standards on the development districts can be adverse.

D. Performance Standards: Quality of Site Design

Performance standards relating to the quality of site design were developed in response to the limitations of traditional density and intensity regulations. Performance standards focus more on how development is carried out rather then concentrating on what development takes place. Uses are generally permitted as a matter of right in performance zoning districts, provided that pre-set performance standards are met. This approach to growth management is used in Bucks County, Pennsylvania; in Lake County, Illinois; Hartford County, Maryland; in Queen Anne's County, Maryland; and in the City of Largo, Florida. It is also applied in whole or in part in many other parts of the county.

The "district" is the essential element of the performance zoning approach. The districts available for a county's consideration range form the resource preservation district to the urban core district. In Cobb Neck, the agricultural, estate, suburban and urban districts may be the most appropriate for planning purposes. A more detailed discussion of districts should be part of the discussion of Community Character.

The "district" is the essential element of the performance zoning approach. The county's character objective for district's range may from a resource preservation district to an urban core district. The district concept is based on the premise that areas of development, or lack of development, can be described by their community character. The type of growth permitted within a district is controlled by performance standards to insure that the desired character, as implied in growth management policies and as perceived by the public, is achieved. Community character has traditionally been thought of as too subjective to be used as a land planning tool. However, the character of an area can be fairly accurately quantified in terms of the development mix that exists between residential, commercial and industrial uses. Land use in the districts can also be characterized by a range of percentages for each of these uses. In addition, the characteristics of a community are often related to such features such as the amount of landscaping on lots, the floor area ratio, lot coverage, impervious surface ratios, roadway widths and others that can be expressed in a performance standards.

In order for performance districts to be an effective part of a comprehensive planning process, there must be a strong connection between districts and the availability of services and infrastructure within those districts. The classification of several zoning categories as a

development district is the most common technique used by counties that want to accommodate new growth. A development district (ie. urban or suburban) must have available sewer and water, otherwise the growth that occurs within that district will not accurately reflect the land use goals originally conceived for that area. If sewer is not available and one and two acre lots are permitted, then these estate districts should not attempt to accommodate more than a small portion of the population. Otherwise, land set aside for agricultural use will have to be opened up for development.

The strength of performance zoning in growth management is due to a number of factors. Its districts are specifically designed to be coordinated with a growth management strategy. The district definitions explicitly point out these intentions. Secondly, by developing districts that have sharply different characters and by reducing the absolute number of districts, the issue involved in a zoning change is clearly on of whether the character of an area should be changed. This creates a closer relationship between the zoning districts and the comprehensive plan than is normally the case with conventional zones, where there are a number of zoning districts that fall within a land use category. The design of a performance ordinance thus discourages the incremental zoning changes that erode the community's land use plan.

There are often performance standards that are expressly designed to insure that public facility objectives are met. For example, standards to control access to highways assist in maintaining the carrying capacity of the road system. A number of performance ordinances and other types of ordinances tie the intensity of development to the ability of the developer to make specific improvements, giving density bonuses for the acquisition of fire equipment or the construction of public facilities. Specific requirements for the provision of recreational facilities and land can built into performance ordinances. Thus, performance zones address some of the financial concerns associated with growth as well.

Another type of performance standard is that which is general in nature and is applied to all properties in a community. Storm water detention/retention ordinances and erosion control ordinances ar two such examples. These ordinances set a level of performance, for example, the rate of run-off from a site cannot exceed what would naturally occur. Again, this type of regulation is intended to transfer burdens that have, in the past, been a public responsibility to the private sector.

E. Performance Standards: Environmental Protection

In addition to providing quality site design, performance standards are also frequently used to protect environmentally sensitive areas. Performance zoning involves strict analysis of the resource values that exist on a proposed development site and requires that actual construction be concentrated or clustered to non-sensitive parts of the site. Performance zoning may also be applied to large areas of land requiring

extensive protection. Agricultural and rural zones, for example, are found in the Queen Anne's County ordinance.

Performance standards can be adopted exclusively for the purpose of protecting the environment. The County Natural Resources Plan can establish specific levels of protection for a number of different resource categories, including woodlands, steep slopes, and wetlands. On a given site, a certain percentage of each of these resources must be left undisturbed. Environmental performance standards can work to the advantage of a developer because they avoid over-protecting sites that are not environmentally sensitive.

Environmental performance standards are more effective at controlling the impact of growth than in controlling the location of growth. With a few expectations, a resource is given a specific level of protection whether it is a low density residential district or a commercial district. The performance standards set definite limits on the development of environmentally sensitive lands. As was pointed out earlier, in St. Mary's, where there is an extensive amount of coastal areas, wetlands and agricultural lands, the impact of environmental performance standards on the location of development may create its own sets of problems by forcing development to be more widely scattered than good facilities or land use planning would dictate. In such cases, there needs to be a balance struck between these competing objectives.

F. Capital Programming

A capital programming plan that is developed in conjunction with a growth management plan addresses the problem of planning public investment very well. It is based on the premise that growth follows infrastructure improvements. Capital programming is a much stronger tool than zoning for the purpose of dictating the location of growth. A well designed capital improvements plan provides for the orderly extension of sewer and water at a rate needed to accommodate anticipated growth.

A capital improvements plan provides the vehicle for elected officials to set priorities and to make the most efficient use of available funds. Capital programming is a tool which officials can use to guide growth toward predetermined.

There is a danger in letting capital improvements follow rather than lead the development process. This has been the experience in many areas in the past, where improvements and extensions of sewer and roads have been made incrementally and only in response to development pressures. On the surface, this appears to be the logical approach - provide services only when there is a recognized need for them. Over the long term, however, this is very inefficient. The capital improvements are not coordinated, are underutilized in some areas and overutilized in others, and are expensive to maintain. For example, water systems without looping and sewer systems that run counter to existing topography frequently result. In counties where capital improvements have been looked upon as development

guidance tools, the results have been much more satisfactory.

Charles County has only limited funds available for capital programming. In order to have the capital improvements precede development, carefully conceived financing mechanisms are needed. Special service districts make use of one such mechanism. The costs for sewer improvements are spread out over a twenty year period, but, at the same time, every landowner within the service district must start paying his share of the improvement costs immediately, even if his land is vacant. This discourages long-term speculation of land in areas designated for development.

G. Exaction Fees

Exaction fees provide a more direct means of obtaining the funds needed for capital improvements to service new developments. Exaction fees were developed in response to the intense pressure that rapid new development placed upon the financial capabilities of local governments. Public monies had to be provided in order to finance necessary facilities such as schools, parks, roads and other public infrastructure.

Exaction fees are an attempt to answer the underlying question of who pays for new growth. Should the costs be borne by the existing residents of the new residents? Local government officials generally feel that the new growth areas should be required to pay a pro rata share of the costs to the community of providing new water and sewerage facilities, parks, roads and schools. The concept of exaction fees takes two forms: impact fees and development exactions.

Impact fees are regulatory devices used by local government to impose charges on new development in order to generate revenues for capital funding. These fees are used to pay for off-site infrastructure that is necessitated by that new development.

Development exactions accomplish the same end as impact fees, but occur at a different point in the land development process. They take the form of mandatory dedication of land or in-lieu of fees and usually occur during the platting process.

Generally, the court decisions upholding impact fees or development exactions require that they meet a three-part standard. First, new development must demand new capital facilities. Secondly, some kind of rational nexus must exist between this new development and the need for these new facilities. Lastly, there must be some assurance that sufficient benefit accrues to the particular development that pays the fees.

At present, courts have upheld properly drafted impact fees or development exactions for water and sewage facilities, parks, roads and schools. Local governments have adopted fees for more general public welfare needs such as police, fire, and emergency medical facilities.

Exaction fees limit growth only in the sense that they may discourage some development due to their cost. If exaction fees are not uniformly applied throughout the County, there is the danger that they may shift the location of new growth rather then regulate it. Application of this technique for Cobb Neck exclusively is limited. For example, exaction fees which are applied only to sewered areas may shift development to unsewered areas.

When combined with an overall growth management plan, impact fees and development exactions are most effective at providing a means for local government to finance the capital improvements associated with new development. New developments will not have a negative impact on the existing community residents if the infrastructure has sufficient capacity to handle the increased demand associated with the new developments.

H. Impact Analysis

Impact analysis is a technique which was designed to measure the impact of a new development on existing natural or man-made systems. Environmental impact statements are the best known of the types of impact analysis and were developed to measure the environmental consequences of governmentally supported actions. The same process can be applied when examining the impacts of a new development on systems such as transportation, the economy, and infrastructure.

The Environmental Impact Analysis process, in its original form, can be a costly one for all its participants: developers, public agencies, and citizens. The developer must hire experts and prepare a major technical report at substantial costs. The community must hold hearings and have a staff capable of sorting through the technical arguments of both sides. Citizens concerned with the protection of the environment must organize experts of their own to be sure that their concerns are competently represented.

From the developer's view, the greatest problem is that the money required to adequately complete an EIS is substantial and speculative in nature. That is, it must be invested with no certainty that the development will be approved, even when the zoning permits the proposed use. The citizens should also be worried about uncertainty. Impact ordinances tend to encourage a case-by-case approach to decision-making with each case standing on its merit, and the personal viewpoints of those who review a particular proposal. Uneven results are predictable if this sort of system is used.

Another problem with the impact analysis process is that it sometimes can be used by citizens to "cloak" their motives in the guise of environmental concerns. For example, the process provides "anti-growth" citizens with a valid mechanism for objecting to any and all new development. Even if some development eventually occurs, the impact analysis process can be used as a very effective stalling tool which

increases the cost of new housing.

If a community or county is to successfully apply the concepts of environmental impact analysis to economic, transportation, or some other type of impact analysis, then it must be able to correct the inherent problems associated with the traditional EIS process. There must be some assurance to the developer that the project will gain approval if the impacts identified by an analysis are mitigated or satisfactorily addressed.

The principal problem with impact analysis is that it is open-ended. Even when a county sets guidelines, the authors of an impact report are still permitted a fair amount of leeway in assessing the potential consequences of a particular development. For example, in an economic impact analysis, the authors of the study may look at the impact of a development on the fiscal resources of the county, on the viability of commercial districts, on the county tax base by other similar developments which may have already received county approval, but which may not, at the time of the study, be fully developed.

In this type of study, the authors will, undoubtedly, identify both positive and negative impacts. If the impacts are not carefully and fairly discussed, there is a the potential for misunderstanding and for manipulation of the final conclusions and recommendations. This is particularly true in studies which involve statistical analysis or complex technical assessments. Both economic and transportation impact assessments fall into his category.

The impact analysis approach regulates development and growth in the sense that it slows the development process. It may or may not result in better development. However, it is likely to result in the expenditure of large amounts of money and time on the part of the developer, the county and citizens, with no assurance of good quality development in the end. The EIS process frequently ends up in court, and there is reason to believe that other types of impact assessment will come to the same end.

I. Population Cap

The Yearly Permit Allocation approach is a much more straightforward way to slow growth. In this approach, a cap is set on the total number of residential units which may be built within the county. This method requires a carrying capacity analysis to indicate that there is a need to regulate the total population of the community.

Even though this approach may seem the most logical way to limit development,it has frequently been found to be illegal. Courts have determined that local officials exceed their authority when they set absolute limits on growth, unless there are studies which clearly indicate the adverse consequence of too much growth. For example, in Boca Raton, Florida, where the city simply voted in a development cap, the ordinance was found to be unconstitutional. In Sanabel, Florida, the islands growth cap was related to the ability of the only bridge to allow

for evacuation during a hurricane, a growth cap that was upheld. Thus, if the permit allocation is directly tied to some essential limiting factor, then the courts are more likely to uphold the allocation. In Cobb Neck, it does not appear that there is sufficient evidence to sustain this type of regulation.

This type of approach works best when it is combined with other growth management techniques. In other words, all applications for development which are made in the early part of the year should not necessarily be granted just because the year's permit allocation has not yet been reached. Rather, the County should adopt standards for review that make it possible for a good quality development, which may be submitted during the latter part of the year, to have a chance at acceptance.

J. Development Permit System

The growth management approach known as the development permit system is very similar to the one just described, except that it relates to the rate of growth rather than the total capacity of the community. Under this approach, Charles would determine the total desired population increase over a period of, say, five years based on its capacity to provide services from its normal taxing revenues. It would then calculate the amount of development per year that would produce the desired growth.

The focus of the two most famous permit systems, Ramapo, New York and Petaluma, California, was on the limited ability of the community to provide services. In both of these communities, they were able to tie the need for the limited ability of the community to provide services. While it is easier to develop a rational for these types of regulations, there are other problems that have decreased their popularity. A rate of growth ordinance is a very complex ordinance. In general, there is a need to hold periodic competitions to award the limited number of development permits. This requires extensive review by the staff over and beyond the normal review process, and because of the limited number of successful applicants, it is likely to attract a lot of "political heat." Most communities have turned to other means of financing the improvements as a better device than the permit system.

IMPLEMENTATION RECOMMENDATIONS TO CONTROL GROWTH ON COBB NECK

The preceding paper has outlined the nature and extent of the growth issues facing the County in the Cobb Neck Study Area and illustrated various zoning and non-zoning techniques designed to implement growth management strategies. None of the options are without certain disadvantages. The appropriate selection of growth management strategies will likely involve consideration and possible selection of a combination of alternatives. The County should recognize that conflicts are inherent between growth management objectives and other objectives of the County.

The task will be to determine the appropriate balance by selecting the implementation options that can yield a coordinated growth management strategy. It must be cautioned that these techniques for controlling growth need to be considered within the framework of the entire County and the growth management strategies are to be adopted countywide.

The following recommendations are intended to facilitate a process for making decision's concerning the selection of the most appropriate means of controlling growth on Cobb Neck. The recommendations breakdown by those that control the location of growth; those that control the quality of growth; and, those that control the rate of growth.

Location Controls

It is recommended that limited development districts be considered in the Cobb Neck and Clifton sewer service areas. It is envisioned that these areas would accommodate higher densities than are planned for the agricultural and resource protection areas, permitting medium density residential and commercial. Some industrial uses may be accommodated adjacent to the Pepco Plant. These areas could be considered as receiving areas in a countywide administered Transfer of Development Rights Program. Swan Point should not be considered as a potential development area since it has a heavy concentration sensitive resources.

It is recommended that future development be concentrated in Village Centers identified in the Land Use element of the plan to reduce the level of disturbance to resources and farming operations in other areas of the peninsula. It is envisioned that these Centers will permit densities greater than the surrounding agricultural lands (up to 2 units per acre with TDRs).

Quality Controls

It is recommended that performance standards be developed to govern site design in the Development Districts and Village Centers which will preserve the rural character of Cobb Neck. These performance standards should be set at varying levels not only consistent with the scale and nature of the rural village and the suburban type developments, but such that they will enhance these areas. It is recommended that performance standards be developed for Waterfront Planned Communities.

Rate Controls

It is recommended that the County continue to use water and sewer facility programming to "throttle" growth on the Neck to levels which allow the broad array of County services to be delivered in a timely manner. However, it is recommended that planned sewer and water improvements to correct existing problems proceed at the fastest possible rate.

COBB NECK MASTER PLAN

AGRICULTURAL AND FOREST PROTECTION ELEMENT

IMPLEMENTATION OPTIONS ANALYSIS

INTRODUCTION

Agriculture is a significant part of Charles County both as an industry and as a component of the County's character and quality of life. Nowhere is the sense of agriculture and rural country quality more pronounced than in Cobb Neck. All of the Countywide comprehensive planning efforts in the past have cited agricultural preservation as a specific goal. Within the Cobb Neck planning area of the County, residents have clearly indicated farmland protection and maintenance of rural character are important objectives of this plan. This section of the plan underscores the value of such a strategy, the problems to be overcome in implementing the goal and alternative means by which Farmland protection to objectives might be implemented.

According to the 1982 Census of Agriculture, 740 farms were in existence in Charles County as of 1982. The area devoted to farming activity among these 746 farms Countywide included 83,598 acres that were considered in farm use. This acreage represents approximately 29 percent of the total land area of the County. A clear indication that agriculture and farming activity is no longer the dominant land use in the County. Nevertheless Agriculture and Forest land use are dominant in the Cobb Neck area. Eighty-five (85) percent of the 27,118 acres of land area in the neck are devoted to farm and forest use. The 10,659 acres are crop and pasture land is a significant portion of the County's active farmland. Many perceive the Cobb Neck area as the last bastion of rural County character as evidenced by this contrast in agricultural use and forest cover when compared to other County areas.

Charles County is currently faced with substantial pressures for growth. This has serious implications given the fact that growth occurs primarily through the conversion of agriculture land for development purposes. The conversion is readily apparent in the 6th and 7th County election districts where the greatest amount of growth in the County has taken place. These districts, although still replete with agricultural and forest resources have experienced a significant shift away from agricultural land use over the past twenty years. Five Thousand (5000) acres of farm land were converted to other uses[1] in the period 1978 to 1982.

1 Source: 1982 U.S. Census of Agriculture, State and County Data Volume 1.

While much of this growth pressure and farm and forest conversion has occurred in northern portions of the County, the Cobb Neck area has evidenced its share of growth pressure in more recent years. The census of population indicates that population with the Cobb Neck election district (Thompkinsville) grew by 31.5% through the period 1970 to 1980 and 10.8% from 1980 to 1987. This growth rate is somewhat less than that of the County generally for the same period. Fortunately the base population of the Cobb Neck area of the County of 3423 persons in 1980 represented only 4.7% of the Countywide total population. While this 1173 person population increase in Cobb Neck since 1970 may not have resulted in the conversion of substantial amounts of farm or forest land to residential use it does reflect a trend toward a much greater rate of growth than witnessed in any single decade prior to 1970. A trend that has accelerated in the past several years based on current building permit data.

Therefore, resident concerns regarding the impact of growth on farm and forest resources are timely if these uses are to remain dominant characteristics or features of Cobb Neck. Steps taken now to protect forest resources and the land base that supports the County Agricultural industry can be effective in maintaining the character of Cobb Neck.

FARM INDUSTRY CHARACTERISTICS

To frame responses to the area residents concern's about farmland preservation it is important to understand farm industry characteristics in Cobb Neck. Charles County, shows great diversity in terms of agricultural production and ranks second among Counties in Maryland in Tobacco production (See Table 1).

TABLE 1
Agricultural Characteristics
Acres Harvested by Crop (1984,1985)

	1984	1985
Corn for grain	8800	9600
Corn for Silage	300	200
Soybeans	8100	8600
Wheat	1800	1500
Barley	400	500
Oats	300	300
Hay	3000	2800
Tobacco	5200	4800
Fresh Market Vegetables	270	295

Source: Maryland Agricultural Statistics, Summary for 1985, Maryland Department of Agriculture

Less data is available to isolate farm production characteristics specific to Cobb Neck, however, discussions with County ASCS office personnel indicate both type of crops grown and farming trends in Cobb Neck are similar to those illustrated for the County generally with a significant amount the overall farming productivity occurring in the study area.

This diversity combined with a central location with easy access to one-half of the United State's population as well as the availability of adequate water supplies would indicate a favorable outlook for a variety of markets produced within the County and State given a sound economic climate for crop prices which has not been apparent in recent years. The predominant markets found in Charles is tobacco, and grain cropping. In 1982, 505 of the 746 farms in the County were engaged in tobacco production. Several smaller markets in the County, considered to have favorable outlooks for the foreseeable future, include fresh fruits and vegetables, and other specialty uses (e.g. Nurseries). In addition, the horse industry is increasingly recognized as an important part of Maryland agribusiness. A high percentage of County farmland is wooded (between 30 and 40% of all land classified as Farmland). A still higher percentage of farmland in the Cobb Neck area (between 40% and 50%) may be wooded based on review of aerial photographs for the study area.

FARM SIZE CHARACTERISTICS

Some changes in the County's agricultural community have occurred in recent years. Between 1978 and 1982, the amount of land in farms dropped by approximately 5,000 acres, from 89,591 acres to 83,598. The average farm size declined slightly from 121 to 112 acres. The number of operations characterized as "small" farms (under 50 acres in size) increased significantly (from 333 to 360). At the same time, medium sized farms, ranging in size from 100 to 179 acres, in size dropped from 136 to 119 in number. Likewise, larger farms, characterized as 260 to 499 acres in size, showed a substantial decrease in number and in acres in production over the 1978 - 1982 period (See Table 2). However, these larger farms may have been subsumed by still larger farm sizes 500 to 999 acres in size which evidence a corresponding increase in number for the same period.

TABLE 2
CHANGES IN FARM SIZE CHARACTERISTICS
1978 - 1982
CHARLES COUNTY, MARYLAND

FARM SIZE (Acres)	1978 FARMS (Number)	1978 ACRES (Number)	1982 FARMS (Number)	1982 ACRE (Number)
1-9	104	528	111	595
10-49	229	5,849	243	6,184
50-99	121	8,554	128	9,231
100-179	136	18,208	119	15,905
180-259	64	13,918	64	13,356
260-499	66	23,448	47	16,297
* 500-999	16	9,625	23	14,403
over 1000	6	9,461	5	7,627
TOTAL	742	89,591	746	83,598

Source: 1982 Census of Agriculture

FARM OPERATIONAL CHARACTERISTICS

Of the 746 farms identified in 1982, 444 were operated by the owner of the farm, 192 are tilled by "part owner operators" (farmers that operate both owned and rented land), while the remaining 110 farms are worked by tenant operators. Over half of the farms are tilled by exclusive owner/operators, with the farm area represented by these enterprises accounting for 51% of the total land devoted to agricultural use in the County. (See Table 3). Part owner/operators, account for production on 40% of all farmland while representing only 25 percent of the total number of farm operations. Conversely tenant operators represent production on 15% of all farm operations yet till only 9% of the total number of acres in agriculture use.

TABLE 3
CHARACTERISTICS OF FARM OPERATORS
CHARLES COUNTY, MARYLAND
1982

Type of Operator	Number of Farms	Percentage of Total Farms	Number of Acres	Percentage of Total Farmland
Owner Operator	444	60%	42,496	51%
Part Owner Operator	192	25%	33,500	40%
Owned Acres			16,157	19%
Rented Acres			17,343	21%
Tenant Operator	110	15%	7,602	9%
TOTAL	746	100.0%	83,598	100.0%

TOTAL ACRES OWNED	58,653
TOTAL ACRES RENTED	24,945

These farm operational trends in the County characterize average County farms as small in size in comparison to many Maryland Counties. Of the 746 Farm operators, only 385 or 52% considered farming their principle occupation or means of income. The most notable trend in agriculture in recent years is the increase in the number of small-farms in the 1-9 acre and 10 to 49 acre ranges of parcel size with a corresponding drop in the number of larger farms over 266 acres in size. Many of the 1 to 9 acre size farms may not be farms at all but rather residential estates in large lot form. A concurrent trend may to be toward the area of "niche" agricultural. Products of niche agriculture can include the growing of fresh fruits and vegetables (marketed through roadside stands or "pick your own" methods), tree farming, nurseries or continued tobacco production. Greater "niche" agricultural activity should be anticipated in the future with decreasing farm sizes. However, the tobacco industry is troubled and acres devoted to tobacco production have dropped significantly in recent years from 6300 acres Countywide in 1983 to about 3000 acres in 1987.

AGRICULTURAL PRESERVATION POLICY ISSUES AND CONSIDERATIONS

Serious efforts to preserve farm land will require a major change in the current County zoning policy. The minimum lot size and densities permitted by current County zoning (R-3) do not preserve farmland, if anything, it only creates additional problems, since it eliminates management of growth by failing to direct it to certain county areas where facilities can be planned to support it. The issues that must be addressed with any preservation program are presented in the following section of this element of the plan.

Though two public forums conducted in 1987 Cobb Neck residents have clearly indicated a desire to preserve farmland in the Cobb Neck area. Area farmers are not concerned only about farmland as a resource but are equally if not more concerned about the future of the Agricultural industry, particularly tobacco markets and prices. Non-farm residents appear to view protection of farm resources as a means of maintaining rural character. While both groups share a farmland protection objective the optional means by which this objective can be achieved will affect the two groups in dramatically different ways. There are a number of positions that can be taken with regard to what appears to be a generally accepted objective in Cobb Neck, the need to preserve the agricultural economy. The obvious concern is with the industry itself.

1. Benefits to the Farmer

Not only is farmland preservation an important objective to area residents, it is also of great benefit to the farming community. Preventing suburban development patterns helps to reduce land use conflicts or nuisances caused by the farmer's new residential neighbors. Land use conflicts result when one person interferes with the way that another person wants to use his land. These conflicts are, of course, two-sided. Agricultural operations can interfere with residential uses while suburban dwellers can hinder the use of land for agricultural purposes. These conflicts increase as more and more residential development takes place and differing types of people move into agricultural areas. Any one of a number of land use conflicts can arise and the problem is compounded by the fact that these conflicts tend to occur simultaneously. Land use conflicts, or nuisances, frequently cited by farmers include: residential complaints (and often times law suits) over farm odors and flies, agricultural noise, and dust, chemical and pesticide spraying; livestock predation by domestic pets, especially dogs; indiscriminate refuse disposal and littering; trespassing, theft and vandalism; significantly altered traffic patterns and farmland that is taken out of production as roads are widened to accommodate new growth. Farmers can also be held financially responsible for any damage caused to residential areas by wandering farm animals. Coping with these nuisances has proven highly annoying as well as financially burdensome for most farmers.

Residents of the urban counties to the north, looking to the County as a more desirable place to live, are unaware of all the aspects that make up rural life. They fail to appreciate or respect the farmer's business and are quick to complain about, or even sue over, annoying farm practices. People overlook the fact that agriculture is an industry and like many other industries (ie. auto and steel) involves some noise and pollution and even some degree of physical danger. Farming operations will always involve annoying practices. Therefore, efforts, other than curtailing farm activity, should be made to reduce land use conflicts. The simplest and best way to avoid land use conflicts is to not permit residential development in agricultural areas. If residential development cannot be avoided, then residential builders even when they are former farmers should be responsible for conflict mitigation. Nuisances can be minimized by providing adequate setbacks to buffer residential units from the farming industry. New residents can be put on notice that farming may have adverse impacts, but that they should not expect the farmer to change his practices. These new neighbors can also be advised not to impose on or create management problems for area farmers but such approaches through notice to all parties usually do little to actually alleviate conflicts.

The rural economy depends on farm support services for its survival. As more and more farmers are forced from their land as a result of urban development, fewer farmers are left to retain the critical mass needed to maintain farm support services. Farm implement dealers, seed and feed sales, and grain elevators depend upon a minimum level of business generated by area farmers. As farmers sell out and business levels decline, these dealers are forced to move on to more agriculturally intense communities or retire. As support services vanish from the community, existing farmers find it increasingly difficult to farm their land efficiently and cost effectively.

At the present time farming in Cobb Neck is not a lucrative business and yet area farmers like those across the county are fighting to hold onto their land. A great many of these farmers are third and forth generation and to them farming is more then just a business, it is a way of life Most farmers that "sell out" do so because the pressures for development are so great that they find it difficult to pass up the price they can get for their land. They may also be taking their retirement income. When farmers can be assured of some sort of permanency, they usually opt to continue farming as opposed to giving up their land.

2. Benefits to the Community

Farmland preservation is beneficial to the community as a whole not only because it is an important industry. The inevitable side benefit of preserving agriculture is the containment of urban sprawl. The prevention of urban sprawl by promoting compact urban development in turn, saves energy, money, and non-renewable resources. Any policy which permits, or worse yet encourages, the piecemeal development of farmland results in a development pattern that is more expensive to service than more compact forms of development. School busing, police, emergency, fire and roads are some of the areas in which the cost of services will either have to rise or the level of service decline if sprawl is permitted.

An increase number of land use conflicts will arise as more development makes its way into Cobb Neck. It is not uncommon for subdivisions to create inefficient land use patterns, taking more land out of agricultural production than they actually displace. Small or oddly shaped lots that often result from subdivision are usually too uneconomical to farm, especially given the large equipment used today. The scattered development pattern also detracts from the rural character that has made Cobb Neck a desirable place to live.

Agricultural land, like energy, is a non-renewable resource. Once development occurs on prime soils, inferior soils will have to be cultivated to maintain current levels of production. Because the practice of upgrading and maintaining inferior soils is energy-intensive, energy can be conserved by preserving the highly productive, self-sufficient soils for agricultural use. Maintaining these productive soils near urban centers will also cut down on the amount of energy needed for the transportation of agricultural products. Unfortunately the soils most productive for farming are those also best suited for residential development given residential on-lot waste disposal standards of the Health department.

Two conflicting aspects of preservation create the central issue that tends to confound efforts to preserve farmland. This issue is the continual conflict between two widely held views of land. The first view holds land to be a commodity to be owned, bought or sold for profit. The value of this commodity is determined by the real estate market and, for all practical purposes, can be realized only once when the farmland is converted to some urban use. The second view, and one that is coming into increasingly popular acceptance, is that land is a resource and, as such, has values that must be measured differently. If it were simply a clash between the public interest view of land and greedy speculators, then the political task would be much easier. However, many farmers hold both views simultaneously: on the one hand complaining about the problems of residential development in agricultural areas, while, on the other, citing a need to be able to sell their land for development when necessary. The two views are mutually exclusive. A critical decision within the farm community, therefore, is whether to come down on one extreme or the other or settle on an outcome that falls somewhere in-between.

The mathematics of this clash of land values is very important. Preservation programs that are strictly resource oriented, that is, that seek the preservation of farmland above all else, ignore the reality that the land is the farmer's prime asset. Farmers understand all too well that land is a commodity, it may in fact be their retirement fund. This commodity can also be used to finance capital equipment or additional land acquisition as well as to purchase seed. During hard times, the farmer can resort to selling off portions of his land for development to cover living and operating expenses. Pure agricultural preservation, however, leaves the farmer with no choice. The land has only agricultural value and it cannot be sold at an increased value for development purposes. In fact, the density selected is usually so low that it discourages most gentlemen farmers. At the other extreme, conventional one to ten acre zoning recognizes the value of land for development, but does nothing to retard its conversion. The key to success for any preservation program is working with the farm community to strike an acceptable balance between the two values. Both the farm community and elected officials must recognize this by balancing conflicting needs in the most appropriate way within the Cobb Neck Study area.

3. Legal and Political Considerations

Legal issues seem to arise whenever a proposed land use policy results in a significant downward change in development expectations. Charles County has R-3 zoning in most agricultural areas permitting 1 house per 3 acres. Any serious attempt to preserve farmland in Cobb Neck will result in a reduced density. Before the County is faced with individuals contending that their property is being taken, it is perhaps useful to define what is meant by the "taking issue". It is argued that a reduction in land values through a down zoning is a violation of the United States Constitution. This is an area that has been litigated many times and, while it is impossible to define when a taking occurs, it is clear that very substantial reductions in property value have not been considered to be a taking as defined in the fifth amendment.

Unfortunately, the courts from the U.S. Supreme Court on down have added to the confusion. Justice Brennan, for example, in his famous dissent in San Diego Gas & Electric v. City of San Diego first notes that the Court (U. S. Supreme Court) has been unable to develop any "set formula" to determine where regulations ends and taking begins". However, in another foot note he adds, "After all, if a policemen must know the constitution why not a planner?" Consequently, each case is decided on its merits, leaving both County lawyers and the landowners' attorneys free to argue their positions.

While there is no hard fast rule about what is definitively a taking, there are a number of legal cases that shed light on the issue. First, however, it is important to note that most cases involve two basic tests: does the regulation bear a reasonable relation to the public health, safety, and

welfare; and does it provide a reasonable beneficial use of the land. The courts have continued to expand the concept of a valid public purpose with regard to regulations. This area is unlikely to cause any problem in agricultural preservation. Note, even in the first zoning case heard by the Supreme Court, it was made clear that a mere diminution of value does not in itself constitute a taking. The Court has never set a formula for this, however, in the Supreme Court case upholding zoning, Village of Euclid v. Ambler Reality Co. (1962), the landowner's property value was reduced by 75% and reductions in value up to 90% have been sustained. Thus, while the precise reduction in value that constitutes a taking in the eyes of the court is unknown, very substantial diminutions in value have not been found improper.

The question of what is the value of property is not as simple as it may seem on the surface. The speculative or development expectations of the landowner may not serve as the basis for measuring value reduction. In wetland cases in Wisconsin (Just v. Marinette County), New Hampshire (Sibson v. State) and Florida (Estuary Properties, Inc.), there has been a recognition that the land may not be destroyed to create value. Simply put, the owner of a swamp owns a swamp and the Constitution does not protect his expectation of converting the swamp by filling it in. In the case of farmland zoning, the Illinois Courts upheld the 160 acre minimum lot size in McHenry, Illinois, a county that is about 45 miles from the center of Chicago and part of the metropolitan area. With previous zoning set at five acre lots, this change created very different expectations.

Lastly, the courts seem to be increasingly willing to recognize the fact that a large portion of the value of a property is created by a community's investments in public facilities (Penn Central Trans. Co. v. City of New York). This may lead to discounting the degree of the reduced value, making it more difficult for the property owner to demonstrate that a taking has occurred. Conversely the implications of the most recent Supreme Court decisions which include "Nolan" and "First Evangelical" are unclear but suggest greater support of the owners rights.

Ultimately, the legal definition of the taking issue may be unimportant given the local political context with which the economic impact of the various proposals for agricultural preservation in Cobb Neck may be viewed.

The question of equity and taking is not identical throughout the Cobb Neck area. In general, the purchase price paid for a large agricultural property is not greatly different from farm value. Farm value appears to be in the $1,200 to $1,600 per acre range versus roughly $2,000 per acre or more in value for development purposes. A reduction in value of only twenty to thirty percent will clearly not be considered a taking so that all of the policy recommendations of this plan will be clearly feasible with no fear of taking being a legal issue. There is a major exception to this statement: the shoreline farms in the Cobb Neck area and possibly those places where the values for agricultural land are much less than development value (ie. $1,400 versus as much as $5,000 to $8,000 per acre or about 85% less). In these areas, the reduction in value is in the danger

zone where finding a taking has occurred is a significant risk. Alternative strategies should be considered in these waterfront areas.

FARMLAND PRESERVATION IMPLEMENTATION TECHNIQUES CONSIDERED FOR APPLICATION IN COBB NECK

There are a wide variety of planning techniques or approaches which can be used to protect farmland in the Cobb Neck area. The most popular and effective technique is the exercise of police power through zoning controls. These controls include:

1. Exclusive agricultural zoning
2. Large lot zoning
3. Fixed area based allocation zoning
4. Performance zoning
5. Land capability rating system
6. Sliding scale zoning

In addition to zoning controls, techniques available for farmland preservation include:

7. Growth Management and Traditional Land Use Control
8. Transferable Development Rights
9. Acquisition
10. Preferential Assessment
11. Economic development programs to enhance farm product marketing.

The following section of the plan illustrates how each of these options might be used and identifies some of the advantages and disadvantages associated with their applications. Zoning in one form or another, is a necessary component of any truly affordable or effective program to preserve farmland in Cobb Neck. Since zoning controls deal only with the use of the land, a careful consideration must be made of how each zoning technique balances the competing views of the land.

1. Exclusive Agricultural Zoning

Exclusive agricultural zoning permits only agricultural uses and their accessory residential structures. In theory, at least, residences would be an accessory rather than a permitted use. In practice, most ordinances have a minimum lot size. The minimum number of acres required under this technique will vary with local needs. For example, a 160-acre minimum is required in Weld county, Colorado and McHenry County, Illinois where corn and beans are major crops, while a 320-acre minimum in San Luis Obispo County, California is considered to be appropriate for the needs of grazing which is the dominant form of agriculture. There are two approaches that can be taken under exclusive agricultural zoning that

address the issue of housing. One approach would be to allow an unlimited number of dwelling units on the property as long as they are directly related to the business of farming. This would allow a farmer the option of providing housing for needed workers. Enforcing this type of regulation is difficult since it requires employment information. Alternately, this type of zoning could, and often does, limit housing by requiring a specified number of acres (ie. 160) for each dwelling unit, treating dwelling units for farm workers like any other household. The number of acres required with this approach reflects the type of agriculture involved. For example, grazing in San Luis County requires more land per farm than corn growing in Illinois. Both require more land than tobacco in Charles County and Cobb Neck which at least until recent years could be grown profitably on less than 20 acres due to its labor intensive nature. A side issue which must be addressed is housing for family members. Some exclusive agricultural zoning districts provide for additional housing for family members.

This technique is highly effective in preserving agricultural land. As urban pressures grow, however, the political pressure to rezone will increase. Because exclusive zoning represents solely a resource point of view without accommodating the commodity aspect of land use, it may fail to adequately deal with situations in areas where the difference in land value between agricultural and urban uses is significant. This may be a problem in Cobb Neck particularly in waterfront areas of the peninsula. The result is that the land is sold only for agricultural purposes, preventing farmers from experiencing any capital gain by selling a portion of their land for development.

Exclusive agricultural zoning ordinances do not always base their criteria on lot size or allocation. Often they define farms operationally by criteria such as a minimum annual income from farm activities and prohibit all residential development which is not related to the farm so defined.

2. <u>Large Lot Zoning</u>

The large lot zoning technique comes in a variety of forms. Large lot ordinances require a substantial minimum lot size, ranging from as little as 20 acres to as much as 640 acres for one single-family dwelling. Under this approach, which is the most common of those applied in many areas of the Country, the lot size requirement is intended to deter the construction of most non-farm dwellings.

Such ordinances generally represent the "resource" rather than the "commodity" view of the land. In its basic form, this technique allows one dwelling unit per "farm" which is defined as a parcel of land containing a specified number of acres. If a farmer wishes to take only part of his land out of production, he cannot sell it for development purposes. In order to sell the land for development, the farmer must sell a parcel which in size conforms to the minimum prescribed by ordinance, usually no less than 20 acres in size. It operates on the assumption that the large minimum lot size required represents too much land for a residential

user to require and will therefore deter residential development. The major problem with this approach is that if land is developed, a large portion will go out of production. Therefore, if used as a tool to preserve farmland in Cobb Neck with each lot created, substantial amounts of land per dwelling or lot would be removed from agricultural use. At the lower end of the minimum lot size scale, large lot zoning tends to have the effect of encouraging rural and suburban sprawl into largely rural and agricultural areas rather than preserving farmland. This sprawl accelerates the differential between land values for agricultural and residential uses which simply forces the farmer from the area. In essence, this technique is large lot, estate type zoning. The larger the lot, the more land that is consumed by fewer people.

3. **Fixed Area-Based Density Zoning**

Fixed area-based density zoning differs from large lot zones in that they allow dwellings to be built on relatively small lots, typically from 1/2 acre to two acres in size. They can be clustered on one part of the farm, leaving the rest relatively far removed from potentially conflicting farm uses.

In fixed area-based density zoning ordinances, owners are allowed to build one house for each unit of land of a specified area that they own. Thus, what have been called "quarter/quarter" zoning ordinances in the midwest allow an owner to build a dwelling unit for each quarter of a quarter section (a section has 640 acres, so a quarter of a quarter is 40 acres). Other such ordinances simply allow one unit for each 40 or some other number of acres owned. No units are allowed for remainders of less than the specified number of acres.

The fixed area-based density approach allows the farmer the option of selling off these non-farm lots for development purposes. In this case, the farmer can enjoy a small capital gain without selling off his entire farm and, at the same time, density is controlled by allowing only one lot per 40 acres of land. The quarter/quarter approach was first developed and used in Carver County, Minnesota and has subsequently been adopted by a number of other counties in Minnesota, Wisconsin and Illinois.

This approach conserves farmland due to its control of density while permitting smaller lot sizes and permits clustering of development. Therefore, it is recommended over large lot zoning for application in Cobb Neck. However, it does not preclude residential development in agricultural areas thus not always's eliminating the problems associated with incompatibilities between farm and residential uses. Some ordinances establish standards to deal with this problem. For example, they may require that new dwellings (1) be a minimum distance from operating farms, (2) be built on the least productive soil on the site, (3) not interfere with accepted farming practices. In a few instances, ordinances designate non-farm dwellings as conditional uses, establish a complex set of criteria which they must meet, and require a local agency to exercise its discretion in determining how best the public interest would be served

by controlling the location of the development. Thus, such zoning may establish a broad spectrum of eligibility criteria for new residential development, ranging from the fairly simple, objective requirements that the lot must not exceed a given size and the proposed dwellings be single family units, to quite complex, judgmental criteria that involve a general evaluation of the appropriateness of allowing the dwellings on a specific site in an agricultural area.

4. Performance Zoning

An increasingly popular approach to zoning control is performance zoning which, of all zoning controls, has the widest range of adaptability. Communities in Pennsylvania, Minnesota and Maryland have successfully incorporated this approach, creating efficient new patterns of development while conserving a rapidly diminishing supply of productive farmland. Under performance zoning landowners may develop their land, but this development must be clustered on a small area of the total property. A vast majority of the land remaining, therefore, is still available for agricultural production or open space preserves. The value of the land will be related to the resources present on the site. In its basic form, the density controls the property value while a minimum open space ratio controls the protection of the land base which supports farmland preservation as well as Natural resource protection objectives.

At the low density end of the spectrum is performance zoning with a density equal to quarter/quarter zoning. The approach entitles the farmer to one non-farm lot per 40 acres of land, however, the lots can be clustered on a given portion of the total farm. Despite the very low density that results (.025 dwelling units per acre along with a .975 open space ratio), the value of the land is quite different than it is for straight 40 acre zoning. For example, if a farm is presently worth $1,400 per acre for agricultural purposes, a 160 acre farm, divided into four lots of forty acres each if sold as a farm, would have a value of $224,000 since the forty acre lots cannot claim residential value. If four one acre lots were sold for residential development, they might bring in $15,000 a piece or $60,000 total for all four lots. With the remainder of the farm having a value of $218,400, the value of the total property would be 278,400 which is twenty-five percent higher than if the land were simply divided into four 40 acre lots.

Three examples of this form of zoning are illustrated: one with a density that approximates one dwelling per 25 acres (.04 du's/acre); one at the equivalent of a 15 acre lot (.07 du's/acre); and one with a density approaching 10 acre zoning (.11 du's/acre). Densities higher than these are possible however higher densities will defeat objectives to preserve farmland.

Performance zoning recognizes the economic conditions in suburban and metropolitan areas where the land values are well in excess of the agricultural value. Through an extreme form of clustering, it seeks to permit the development of a certain portion of the land and the retention

of a higher percentage of the land (somewhere between 85 and 98 percent) as open space. The vast majority of the property, therefore, is maintained in farm use while, at the same time, enabling the farmer to sell off portions of the farm for urban development. The farmer retains the agricultural value of his property, largely intact, while getting a substantial capital gain in terms of the development that is permitted. Resource protection is an important aspect of performance zoning, however, a great deal of attention is given to the commodity view. The attractiveness of performance zoning is that it offers the greatest potential to balance the commodity and resource points of view through a wide range of economic situations.

However, performance zoning will also permit the co-location of farm and clustered residential uses in Cobb Neck, resulting in some incompatibilities. Health department standards for minimum lot sizes and perc testing requirements may limit the degree to which clustering can be achieved. The following illustrations graphically depict the development configurations that are likely to occur from the application of performance zoning.

PERFORMANCE ZONING

TOTAL DU's	4
NEW LOTS	3
TOTAL ACRES	116.69
TOTAL AGRICULTURAL	87.15
TOTAL WOODLAND	23.23
TOTAL DEVELOPED	6.89
OSR	.94
DENSITY	.04 du's/acre

TABLE 4

PERFORMANCE ZONING (4 DU'S)

DEVELOPMENT SUMMARY

TOTAL DWELLING UNITS	4
NEW LOTS	3
TOTAL ACRES	116.49
TOTAL AGRICULTURAL	87.15
TOTAL WOODLAND	23.25
TOTAL DEVELOPED	6.09
OPEN SPACE RATIO (OSR)	.94
DENSITY	.04 du's/acre

ECONOMIC ANALYSIS

TOTAL AGRICULTURAL VALUE = 111.90 acres X $1,400/acre = $156,660

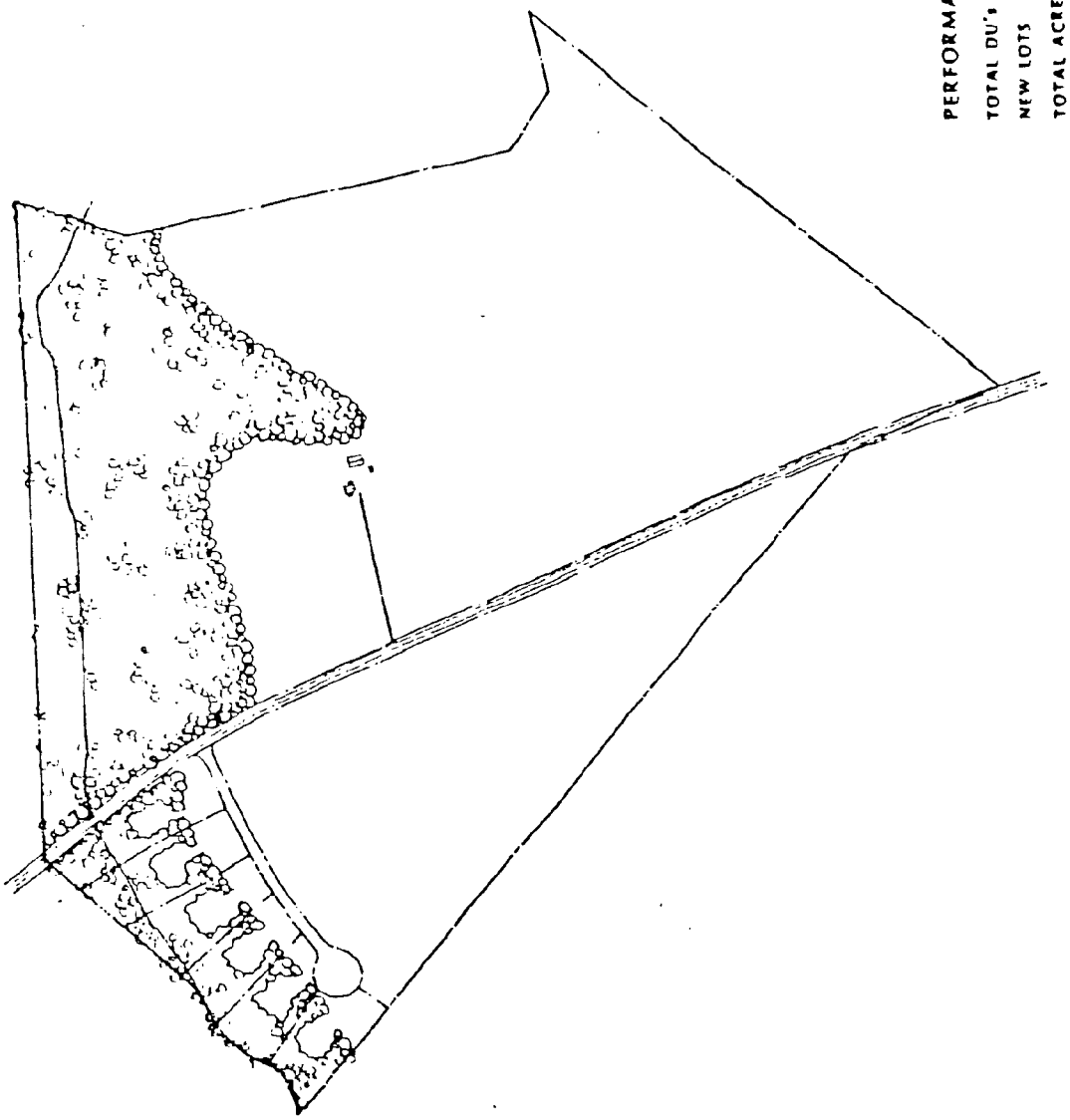
TOTAL LOT VALUE = 3 lots X $15,000/lot = $45,000

TOTAL VALUE = $156,660 + $45,000 = $201,660

TOTAL SPECULATIVE VALUE = 116.49 acres X $2,000/acre = $232,980

VALUE ADDED = $201,660 - $232,980 = -$31,320

PERCENTAGE CHANGE = -13.44 %



PERFORMANCE ZONING

TOTAL DU's	7
NEW LOTS	6
TOTAL ACRES	116.49
TOTAL AGRICULTURAL	85.67
TOTAL WOODLAND	19.03
TOTAL DEVELOPED	11.79
OSR	.90
DENSITY	.07 du's/acre

TABLE 5

PERFORMANCE ZONING (7 DU'S)

DEVELOPMENT SUMMARY

TOTAL DWELLING UNITS	7	
NEW LOTS	6	
TOTAL ACRES	116.49	
TOTAL AGRICULTURAL	85.67	
TOTAL WOODLAND	19.03	
TOTAL DEVELOPED	11.79	
OPEN SPACE RATIO (OSR)	.90	
DENSITY	.07	DU'S/ACRE

ECONOMIC ANALYSIS

TOTAL AGRICULTURAL VALUE = 106.20 acres X $1,400/acre = $148,680

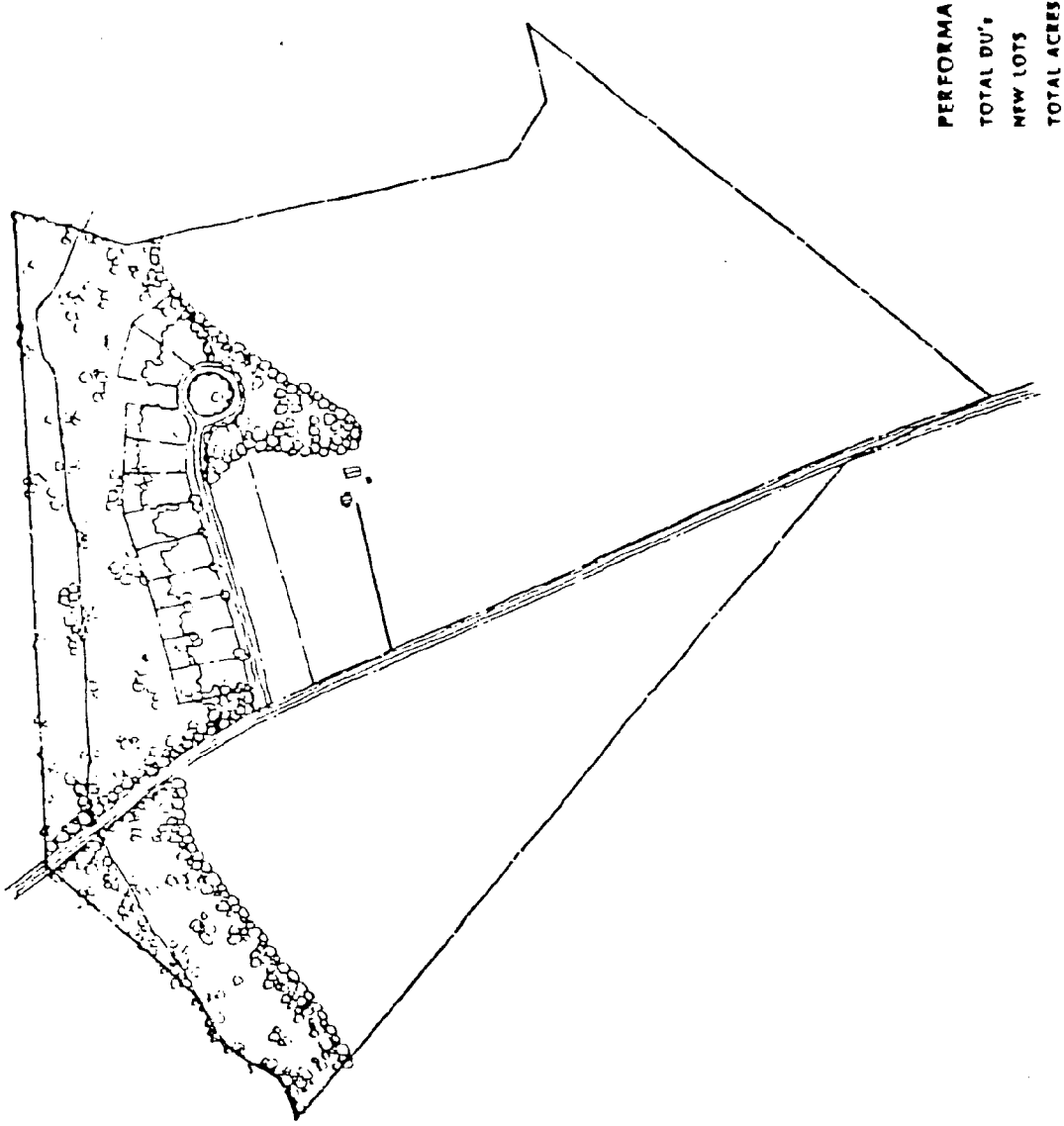
TOTAL LOT VALUE = 6 lots X $15,000/lot = $90,000

TOTAL VALUE = $148,680 + $90,000 = $238,680

TOTAL SPECULATIVE VALUE = 116.49 acres X $2,000/acre = $232,980

VALUE ADDED = $238,680 - $232,980 = $5,700

PERCENTAGE CHANGE = 2.45 %



PERFORMANCE ZONING

TOTAL DU's	12
NEW LOTS	11
TOTAL ACRES	116.69
TOTAL AGRICULTURAL	86.39
TOTAL WOODLAND	19.35
TOTAL DEVELOPED	10.73
OSR	.90
DENSITY	.11 du's/acre

TABLE 6

PERFORMANCE ZONING (12 DU'S)

DEVELOPMENT SUMMARY

TOTAL DWELLING UNITS	12
NEW LOTS	11
TOTAL ACRES	116.49
TOTAL AGRICULTURAL	86.19
TOTAL WOODLAND	19.55
TOTAL DEVELOPED	10.75
OPEN SPACE RATIO (OSR)	.90
DENSITY	.11 du's/acre

ECONOMIC ANALYSIS

TOTAL AGRICULTURAL VALUE = 107.24 acres X $1,400/acre = $150,136

TOTAL LOT VALUE = 11 lots X $12,500/lot = $137,500

TOTAL VALUE = $150,136 + $137,500 = $287,636

TOTAL SPECULATIVE VALUE = 116.49 acres X $2,000/acre = $232,980

VALUE ADDED = $287,636 - $232,980 = $54,656

PERCENTAGE CHANGE = 23.46 %

5. **Land Capability Rating System**

Most performance zoning uses a site capacity calculation as the basis for determining the intensity of use with sensitive areas being protected through lower intensities. A form of zoning exists in Black Hawk County, Iowa where the quality of the soil is linked to the degree of protection as opposed to across-the-board open space requirements. This approach prohibits development on prime agricultural soils, identified through the use of soil surveys and additional information provided by the Soil Conservation Service, allowing only inferior soils to be converted to non-agricultural uses. Black Hawk County made use of the Corn Suitability Rating (CSR), (a rating of bushels per acre), provided by the Conservation Service which reflects such factors as predicted yields for commonly grown crops given certain farm management practices. The CSR used in Black Hawk ranged from a low of five to a high of 100. with more productive soils receiving higher rating. Development is prohibited on soils with a CSR rating of 70 or above, which equals approximately 70 percent of the land in the County. Development is permitted on the remaining land since it is less suited for agricultural production. This approach attempts to balance the resource and commodity views of the land by recognizing that some "farmland" is better suited for development. However, very often the most productive soils for farm use are also most suitable for on-site septic systems and residential lots. Therefore this system of protection can create inherent conflicts through competition by farm and residential uses for use of the same soils.

In Cobb Neck, relatively large patches of woodland can be found within the agricultural areas, generally along drainageways and/or steep slopes in the northern neck area. In the agricultural districts, these woodlands could be considered the developable lands. Houses in the woods will not interfere with farm operations while, at the same time, they will be well buffered from the nuisances associated with the agricultural industry. The drawback is the relatively high water tables of some of these soils, making it difficult to install septic tanks. There are, however, alternative waste treatment methods which can be used to solve these problems. In general, this approach to zoning is intended to save the best land for agriculture on a site-by-site basis.

6. **Sliding Scale Zoning**

The sliding scale form of zoning is based on the assumption that each farmer may want to sell off a few lots or give a lot to a family member. This approach, therefore, permits a basic allotment of lots for each farm, with one additional lot awarded for specific increments in the amount to total land. For example, a zoning ordinance with this type of provision might read as follows:

> Each farm is entitled to subdivide off one lot, with the total number of lots subdivided determined by the size of the farm as indicated by this breakdown:

ACRES IN FARM	PERMITTED NUMBER OF DWELLINGS
3-10	2
10-20	3
20-40	4
40-80	5
80-160	6
160-320	7
320-640	8
640-1280	9
1280 +	10

As indicated by this breakdown, sliding scale zones allocate building rights on the basis of ownership of units of land of a given area, but the number of dwellings allocated per acre decreases as farm size increases. The minimum building lot sizes in sliding scale zones are much the same as those in fixed area-based density zones and may be one to three acres each. This technique allows the same kind of clustering on land that is not well-suited for agriculture as others presented.

Since Cobb Neck farm sizes are often small (tobacco production does not require large acreage) and a fixed density might appear to limit development opportunities on a small farm, sliding scale zoning may be used to offset or better balance reasonable development opportunity on small as well as large farm parcels.

7. <u>Growth Management and Traditional Land-Use Controls</u>

The techniques which revolve around growth management and agricultural preservation are best represented by the urban boundary or development districts concepts. With these techniques, a clear dividing line is established between rural and urban areas. These lines are drawn to contain the sprawl of urban development to make it easier for the community to provide necessary public services. A development district is designed to handle all the community's growth for a twenty year planning period, making development in rural areas unnecessary. Development districts contain sprawl and prevent the encroachment of urban development upon agricultural lands. Such techniques need to be accompanied by some form of land use control and typically exclusive agricultural zoning or other farm preservation zoning techniques have been used as a supplement to this technique.

The development district works primarily by directing growth away from farmland and is generally considered to be a very positive approach to

farm preservation since it is capable of containing all of a community's growth within planned areas. Land outside of the district, however, must be zoned and agricultural or rural zoning needs to be sufficiently strict to ensure that no development or little development occurs in these areas. Because the growth area is reviewed once every five years, the door is left open for needed adjustments that arise as time and the market place react to the plan. In Cobb Neck, Cobb Island, Swan Point and the Clifton area are rough examples of small development districts although they may not have been pre-mapped or preplanned to serve this purpose.

It is essential that the development area be sufficiently large to handle long-term growth. In metropolitan growth areas, the demand for land is high enough that no landowner or group of landowners should be able to restrict land availability. In Cobb Neck, the amount of land needed to accommodate growth is smaller, particularly if other County areas can be designated as development districts. Care should be taken in establishing growth areas. If only a small amount of land is available for development, the market will be lumpier and the risk of monopoly greater, both of which may lead to a change in development trends in a particular area. Communities with large amounts of land set-aside for development, are less likely to experience changes in development trends since there is less risk of monopoly. When only a small amount of land is open for development, greater safety margins will have to be build in to prevent changes in trends. A change in the rate of growth will also have a greater impact on smaller communities like Cobb Neck than on larger ones. Too small a growth area will result in the inflation of housing costs. A much higher tax on vacant land within development districts could help eliminate this inflation. This type of planning may often require that some good agricultural land be placed in development district classification. This technique, therefore, is not quite as resource sensitive as when zoning techniques are used without the growth management framework. It does, however, recognize the commodity view of the land by setting aside districts for development purposes while avoiding speculative values.

8. Transferable Development Rights

There are techniques for preserving farmland that attempt to join traditional land use and zoning controls with some form of market mechanism. Generally, they might all be classed under the rubric of transfer of development rights (TDR), but there are a number of variations on this theme which have widely differing qualities. To better understand the concept of TDR it is important to know that ownership is not singular, but, instead, represents a "bundle of rights". A landowner can own and live off the land while, at the same time, sell off certain rights to use it (ie. the right to extract minerals). This splitting of the land interests can be found in Cobb Neck where property owners might sell off the right to hunt on their land. The selling of conservation easements is another example of TDR. All variations of TDR seek to strike a better balance between the commodity and resource aspect of the land. In general, TDR provides a market mechanism which enables the landowner to

receive a portion of the compensation he would receive to develop his land to a reasonable density. TDR attempts to achieve the dual objectives of promoting both development and resource protection by enabling the landowner to transfer the development potential from one piece of property to another.

The community creates a market by establishing two types of zoning districts. The first district provides development rights for landowners and is, thus, the transfer district. The other district, known as the receptor district permits a density increase through the purchase of development certificates. For example, the density in the receptor district might be increased from two to four dwelling units per acre if a development right is purchased for each unit.

The simplest variation of TDR is the use of clustering with noncontiguous properties. This permits the owner(s) of several pieces of land to concentrate all of the development, that might otherwise occur separately, on one piece of land. It may be implemented through familiar Planned Unit Development (PUD) or clustering techniques. Non-contiguous development can be used without sophisticated zoning amendments and requires absolutely no new state enabling legislation. Collier County, Florida has used this technique to preserve coastal wetlands. A more sophisticated type of transfer involves the actual transfer of title to the development rights.

There are two possible forms of transfer: voluntary and mandatory. With both, the land owner transfers the development potential of land through the sale of certificates to another landowner. In concept, it is no different than non-contiguous development except that government creates the certificates and establishes a market place for them.

The voluntary system is simply an option available to the land owner. The land owner is notified that a certain number of development permits are attached to the property and that they may be sold to other landowners in a designated area within the community. Mandatory transfer of development rights indicates that the only way the landowner is to be compensated for various restrictive zoning classifications is by selling his development rights to landowners in other districts. Both transfer of development rights systems are market dependent. They can only function as market mechanisms. Thus, this must be a supplemental system for agricultural preservation. Rarely, will a community have sufficient development potential to preserve all the land deemed desirable for preservation using Transferable Development Rights. This is certainly true of Cobb Neck where the concept of T.D.R. must be considered in the context of the whole County rather than the Neck alone.

The last variation on the theme is transferable development permits. This particular system requires the governing body to issue new certificates periodically to accommodate all the communities growth for a specified period of time. While this system does away with the market imperfections of development rights, in terms of insufficient development demands in any given period of time, is certainly by far the most

complicated and sophisticated of all the development rights schemes in terms of administration. It must be enacted on a county wide scale to avoid inequities between communities.

All of the transfer of development rights schemes benefit by attempting to accommodate both views of land and, therefore may be suitable for incorporation as one of several planning techniques in an agricultural preservation strategy. The system is most viable when tuned to the market. Landowners have the flexibility to sell development rights, to joint venture development with a builder, to speculate on the development rights or do nothing. Thus, the landowner retains most of the options they have today.

9. **Acquisition**

One of the oldest techniques available to local governments for farmland preservation is acquisition. That is, the government purchases the property. Acquisition, however, need not be fee simple. Rather, an easement restricting development may be purchased while the farmer continues to own the land. Outright fee simple acquisition is a costly process and is most appealing to the most urban communities where they have a large population base and have already lost much of the agricultural land which they now work to preserve. Seldom is it possible for a community to have sufficient money to preserve farmland through this technique alone. This approach established through Maryland's Agricultural Land Preservation Program, recognizes both the commodity and the resource aspect of the land, but requires a great deal of public commitment of funds to the preservation of the land.

10. **Preferential Assessment**

Maryland's Farmland Assessment Law provides that property being farmed has to be assessed at farm property value. Farmland typically has an assessed valuation considerably lower than land used for industrial, commercial or residential purposes. Because of greater difference in land valuation, the Farmland Assessment Law serves as a subsidy to farmers in the form of lower taxes. The primary purpose of this law is to help farmers hold onto and maintain their land. This preferential assessment is justifiable given the intent of the law. Where it becomes objectionable, however, is when speculators, who have made a commitment to development and have increased the value of the land through zoning, take advantage of this preferential treatment by retaining land in farming until development begins. In addition to helping farmers, this Law serves as a subsidy to developers in the form of a tax shelter. Once farmland has been sold to a developer, the land should be taxed at fair market value (the value of the land for development purposes).

11. Economic Development Programs to Enhance Farm Product Marketing

Given the conditions of the farming economy generally; and the tobacco industry in particular, preserving the land base to support farming alone does little to maintain the farm industry. Efforts to support farm marketing efforts through farm markets and at a larger level to promote Southern Maryland tobacco markets appear to be particularly important. The County Economic Development Commission should assist the farm community to enhance its marketing position or create new markets for locally grown products. The tri-county mission to North Carolina and Virginia by County Commissioners and agricultural representatives exemplifies the kind of effort in marketing which will be required to sustain the agricultural industry. Discussions between the area farmers, extension service representatives, and the Director of the County Economic Development Commission would be required to ascertain if and how such a marketing program might be best designed.

IMPLEMENTATION RECOMMENDATIONS TO PRESERVE FARMLAND IN COBB NECK

The preceding section of this element of the plan has outlined characteristics of the Charles County and Cobb Neck Farm economy and illustrate's various zoning and non-zoning techniques designed to implement Farm Preservation objectives. None of the options are without certain disadvantages. Appropriate selection of Agricultural Preservation measures will likely involve consideration and possible selection of a combination of alternatives.

While this element of the plan illustrates options available to the residents of Cobb Neck and the County Commissioners, the ultimate means selected to preserve farmland in Cobb Neck is a decision to be made jointly by elected officials and area residents (particularly area farmers). Their decision must be both legally defensible and politically acceptable.

The following plan recommendations are intended to facilitate a process for making decision's concerning the selection of the most appropriate means for achieving the farmland preservation objectives in Cobb Neck.

- Some form of land use control through zoning is clearly the most effective and affordable means by which farmland can be preserved in Cobb Neck.

- Selection of a combination of zoning tools or techniques is likely necessary rather than selection of only one technique to preserve farmland in the study area. Techniques recommended as best suited for the area for consideration and discussion by area residents include:

    - Area-based density zoning

    - Performance Zoning

  These two techniques achieve protection of the Necks critical mass of farmland yet permit farm owners development opportunity options.

- Sliding Scale zoning is recommended for application on small farms where performance zoning or Fixed area-based density limits are overly restrictive when applied to small farms. Small farms (under 40 acres in size could also conceivably be receiving areas for transferred development rights although their development introduces greater potential conflict between farm and non-farm residential uses.

- The transfer of development rights should be considered in conjunction with the zoning approach selected, but only in the context of planning and zoning for the entire County. This

concept permits financial return to the farm owner without creating lots in areas incompatible with farming activities. However, receptor zones for the development rights purchased would likely be County area's north of Cobb Neck. Their selection requires Comprehensive Planning for their location which can be accomplished in the coming year as part of the County Comprehensive Planning Process.

- Both area farmers and other residents of the neck should be the primary actors in selecting the means by which zoning techniques are combined to preserve farmland resources. If crafted in the context of farm resource protection Countywide, other County farmers should also be participants in the process.

- Techniques to preserve farmland should not be limited to zoning alone. Additional techniques might include abatement of property taxes in Agriculturally zoned districts since public service's are not demanded absent significant levels of development.

- Planning efforts to increase marketing opportunities for farm products and to maintain agriculture as a component of County economic development programming efforts are requisite to industry protection while zoning protects the land base which is only an industry component.

- Areas of Cobb Neck considered appropriate for Agricultural protection are identified on the Land Use Plan Map. Preservation zoning techniques applied within these areas may differ to the degree to which alternative approaches are determined acceptable among the residents and farmers in different areas.

In final analysis, techniques for preserving farmland in Cobb Neck can be better defined and framed at a Countywide level rather than isolated in their application to Cobb neck. Countywide zoning techniques meet legal uniformity requirements and permit a better focused assessment of opportunities to protect farmland in other areas of the County where it is a dominant land use.

COBB NECK MASTER PLAN
NATURAL RESOURCES PROTECTION IMPLEMENTATION
OPTIONS ANALYSIS

INTRODUCTION

The natural environments of Cobb Neck manifest a diverse base of resources which in turn support a variety of habitats for plant and wildlife communities throughout the Peninsula. These diverse environments greatly contribute to the overall beauty of the area which is a significant component of the Cobb Neck's visual quality and character.

Despite a continuing debate concerning the degree to which the natural environment should be subjugated to the needs and desires of people, there are very few people who have experienced some part of nature's offerings available on Cobb Neck who do not appreciate the environmental amenities of the area. The wildlife, plant, land, and water resources of the Neck have historically been a source of income, enjoyment, and sense of well-being for numerous generations and that sentiment has been widely expressed by residents of the area through public forums.

The Cobb Neck area residents have identified issues of concern and established objectives for this plan to protect and enhance the physical characteristics of the natural environment on the peninsula. The purpose of this section of the Plan is to: identify those physical features which are major components of the peninsula's natural environment: discuss their importance and need for protection; and outline optional zoning and non-zoning means of implementing protection policies. Some of the protection techniques discussed are already initiated through established County Zoning and Subdivision Regulations and more recently through overlay zoning applied to the County's Critical Area including Cobb Neck.

THE FRAMEWORK FOR COBB NECK RESOURCE PROTECTION

The environmental protection problem is very similar to that faced in agricultural preservation in that it sets two opposing views about land use against each other. We can all agree to objectives that call for the protection of natural resources, yet, if it is our own land on which development is severely limited, then we evoke the rights of property owners with equal vehemence. Conventional responses have heightened these conflicts by focusing on "density" and "lot size" as the standard for environmental protection. Worse yet, there may be little direct connection between the zoning standards of density or lot size and the local environmental protection objectives to be achieved.

There are major differences between resource preservation and agriculture preservation which make separate treatment of these topic areas logical. Agricultural lands are preserved for active use by man to produce crops, and hence have a significant and immediate land use value. Most natural

resource areas are preserved by leaving them, in whole or in part, in a less disturbed state, and thus do not have the same use value. Thus, the direct immediate economic benefits associated with the protection of the Cobb Neck's natural resources are less than those produced by protecting agriculture. The second major difference is the amenity value that many natural resources have in the residential market place. These values make them premium house sites, and some waterfront locations are ideal for recreational and water-dependent uses, such as marinas, that create higher land values for development. Together, these differences greatly complicate many efforts to protect natural resources.

When planning the County's future land use it is very important to consider the management objectives for each resource and to carefully and precisely delineate the connections between land uses and environmental effects. Separating the issues associated with agriculture preservation from the issue of resource management avoids the cardinal error of mixing two environmental objectives that have internal conflicts. For example, agriculture is clearly one source of nutrient loadings and sedimentation in the Wicomico and Potomac Rivers. Preserving good water quality and intensive agriculture are not always mutually compatible goals and thus deserve separate consideration.

The resource management issues in Cobb Neck are similar to those that exist throughout the nation. In order to form a rational approach to addressing these issues, resource management objectives should be based on the results of substantive environmental analysis and should distinguish between different resource categories (i.e. woodlands, flood plains, and non-tidal wetlands) and their locations (i.e. aquatic versus land environments). Most crucial of all is the understanding of the systemic and cyclical aspects of environments. Since each element or environmental unit is a component of one or more systems, protection of its function is more important than protecting it solely for its own sake. Various essential components of life move through a cycle whose operation must be maintained.

An appropriate basis is required for zoning, and in environmental protection it is essential that the standards be soundly based on scientific fact. We have, therefore, developed a system of classification, which evolves from the discussions of various features of the Neck described in the background studies and analysis section of the plan (see Parts I and II).

At the simplest level, Cobb Neck is divided into two site regions: water and coastal plain. The State of Maryland Water Resource Administration, U.S. Corps of Engineers and U.S. Coast Guard control structural activities in the Potomac and Wicomico Rivers and their tributaries. Only in the very near-shore waters does the County have any regulatory role. Thus, except for a concern for the impact of land uses on adjacent rivers and tributaries and the location of water-dependent land uses, there is no attempt to plan for water bodies surrounding the peninsula. We furthermore propose classifying the land environment into three physiographic complexes: Critical Area, upland, and agricultural. The

ACRES IN FARM	PERMITTED NUMBER OF DWELLINGS
3-10	2
10-20	3
20-40	4
40-80	5
80-160	6
160-320	7
320-640	8
640-1280	9
1280 +	10

As indicated by this breakdown, sliding scale zones allocate building rights on the basis of ownership of units of land of a given area, but the number of dwellings allocated per acre decreases as farm size increases. The minimum building lot sizes in sliding scale zones are much the same as those in fixed area-based density zones and may be one to three acres each. This technique allows the same kind of clustering on land that is not well-suited for agriculture as others presented.

Since Cobb Neck farm sizes are often small (tobacco production does not require large acreage) and a fixed density might appear to limit development opportunities on a small farm, sliding scale zoning may be used to offset or better balance reasonable development opportunity on small as well as large farm parcels.

7. **Growth Management and Traditional Land-Use Controls**

The techniques which revolve around growth management and agricultural preservation are best represented by the urban boundary or development districts concepts. With these techniques, a clear dividing line is established between rural and urban areas. These lines are drawn to contain the sprawl of urban development to make it easier for the community to provide necessary public services. A development district is designed to handle all the community's growth for a twenty year planning period, making development in rural areas unnecessary. Development districts contain sprawl and prevent the encroachment of urban development upon agricultural lands. Such techniques need to be accompanied by some form of land use control and typically exclusive agricultural zoning or other farm preservation zoning techniques have been used as a supplement to this technique.

The development district works primarily by directing growth away from farmland and is generally considered to be a very positive approach to

farm preservation since it is capable of containing all of a community's growth within planned areas. Land outside of the district, however, must be zoned and agricultural or rural zoning needs to be sufficiently strict to ensure that no development or little development occurs in these areas. Because the growth area is reviewed once every five years, the door is left open for needed adjustments that arise as time and the market place react to the plan. In Cobb Neck, Cobb Island, Swan Point and the Clifton area are rough examples of small development districts although they may not have been pre-mapped or preplanned to serve this purpose.

It is essential that the development area be sufficiently large to handle long-term growth. In metropolitan growth areas, the demand for land is high enough that no landowner or group of landowners should be able to restrict land availability. In Cobb Neck, the amount of land needed to accommodate growth is smaller, particularly if other County areas can be designated as development districts. Care should be taken in establishing growth areas. If only a small amount of land is available for development, the market will be lumpier and the risk of monopoly greater, both of which may lead to a change in development trends in a particular area. Communities with large amounts of land set-aside for development, are less likely to experience changes in development trends since there is less risk of monopoly. When only a small amount of land is open for development, greater safety margins will have to be build in to prevent changes in trends. A change in the rate of growth will also have a greater impact on smaller communities like Cobb Neck than on larger ones. Too small a growth area will result in the inflation of housing costs. A much higher tax on vacant land within development districts could help eliminate this inflation. This type of planning may often require that some good agricultural land be placed in development district classification. This technique, therefore, is not quite as resource sensitive as when zoning techniques are used without the growth management framework. It does, however, recognize the commodity view of the land by setting aside districts for development purposes while avoiding speculative values.

8. <u>Transferable Development Rights</u>

There are techniques for preserving farmland that attempt to join traditional land use and zoning controls with some form of market mechanism. Generally, they might all be classed under the rubric of transfer of development rights (TDR), but there are a number of variations on this theme which have widely differing qualities. To better understand the concept of TDR it is important to know that ownership is not singular, but, instead, represents a "bundle of rights". A landowner can own and live off the land while, at the same time, sell off certain rights to use it (ie. the right to extract minerals). This splitting of the land interests can be found in Cobb Neck where property owners might sell off the right to hunt on their land. The selling of conservation easements is another example of TDR. All variations of TDR seek to strike a better balance between the commodity and resource aspect of the land. In general, TDR provides a market mechanism which enables the landowner to

receive a portion of the compensation he would receive to develop his land to a reasonable density. TDR attempts to achieve the dual objectives of promoting both development and resource protection by enabling the landowner to transfer the development potential from one piece of property to another.

The community creates a market by establishing two types of zoning districts. The first district provides development rights for landowners and is, thus, the transfer district. The other district, known as the receptor district permits a density increase through the purchase of development certificates. For example, the density in the receptor district might be increased from two to four dwelling units per acre if a development right is purchased for each unit.

The simplest variation of TDR is the use of clustering with noncontiguous properties. This permits the owner(s) of several pieces of land to concentrate all of the development, that might otherwise occur separately, on one piece of land. It may be implemented through familiar Planned Unit Development (PUD) or clustering techniques. Non-contiguous development can be used without sophisticated zoning amendments and requires absolutely no new state enabling legislation. Collier County, Florida has used this technique to preserve coastal wetlands. A more sophisticated type of transfer involves the actual transfer of title to the development rights.

There are two possible forms of transfer: voluntary and mandatory. With both, the land owner transfers the development potential of land through the sale of certificates to another landowner. In concept, it is no different than non-contiguous development except that government creates the certificates and establishes a market place for them.

The voluntary system is simply an option available to the land owner. The land owner is notified that a certain number of development permits are attached to the property and that they may be sold to other landowners in a designated area within the community. Mandatory transfer of development rights indicates that the only way the landowner is to be compensated for various restrictive zoning classifications is by selling his development rights to landowners in other districts. Both transfer of development rights systems are market dependent. They can only function as market mechanisms. Thus, this must be a supplemental system for agricultural preservation. Rarely, will a community have sufficient development potential to preserve all the land deemed desirable for preservation using Transferable Development Rights. This is certainly true of Cobb Neck where the concept of T.D.R. must be considered in the context of the whole County rather than the Neck alone.

The last variation on the theme is transferable development permits. This particular system requires the governing body to issue new certificates periodically to accommodate all the communities growth for a specified period of time. While this system does away with the market imperfections of development rights, in terms of insufficient development demands in any given period of time, is certainly by far the most

complicated and sophisticated of all the development rights schemes in terms of administration. It must be enacted on a county wide scale to avoid inequities between communities.

All of the transfer of development rights schemes benefit by attempting to accommodate both views of land and, therefore may be suitable for incorporation as one of several planning techniques in an agricultural preservation strategy. The system is most viable when tuned to the market. Landowners have the flexibility to sell development rights, to joint venture development with a builder, to speculate on the development rights or do nothing. Thus, the landowner retains most of the options they have today.

9. **Acquisition**

One of the oldest techniques available to local governments for farmland preservation is acquisition. That is, the government purchases the property. Acquisition, however, need not be fee simple. Rather, an easement restricting development may be purchased while the farmer continues to own the land. Outright fee simple acquisition is a costly process and is most appealing to the most urban communities where they have a large population base and have already lost much of the agricultural land which they now work to preserve. Seldom is it possible for a community to have sufficient money to preserve farmland through this technique alone. This approach established through Maryland's Agricultural Land Preservation Program, recognizes both the commodity and the resource aspect of the land, but requires a great deal of public commitment of funds to the preservation of the land.

10. **Preferential Assessment**

Maryland's Farmland Assessment Law provides that property being farmed has to be assessed at farm property value. Farmland typically has an assessed valuation considerably lower than land used for industrial, commercial or residential purposes. Because of greater difference in land valuation, the Farmland Assessment Law serves as a subsidy to farmers in the form of lower taxes. The primary purpose of this law is to help farmers hold onto and maintain their land. This preferential assessment is justifiable given the intent of the law. Where it becomes objectionable, however, is when speculators, who have made a commitment to development and have increased the value of the land through zoning, take advantage of this preferential treatment by retaining land in farming until development begins. In addition to helping farmers, this Law serves as a subsidy to developers in the form of a tax shelter. Once farmland has been sold to a developer, the land should be taxed at fair market value (the value of the land for development purposes).

11. Economic Development Programs to Enhance Farm Product Marketing

Given the conditions of the farming economy generally; and the tobacco industry in particular, preserving the land base to support farming alone does little to maintain the farm industry. Efforts to support farm marketing efforts through farm markets and at a larger level to promote Southern Maryland tobacco markets appear to be particularly important. The County Economic Development Commission should assist the farm community to enhance its marketing position or create new markets for locally grown products. The tri-county mission to North Carolina and Virginia by County Commissioners and agricultural representatives exemplifies the kind of effort in marketing which will be required to sustain the agricultural industry. Discussions between the area farmers, extension service representatives, and the Director of the County Economic Development Commission would be required to ascertain if and how such a marketing program might be best designed.

IMPLEMENTATION RECOMMENDATIONS TO PRESERVE FARMLAND IN COBB NECK

The preceding section of this element of the plan has outlined characteristics of the Charles County and Cobb Neck Farm economy and illustrate's various zoning and non-zoning techniques designed to implement Farm Preservation objectives. None of the options are without certain disadvantages. Appropriate selection of Agricultural Preservation measures will likely involve consideration and possible selection of a combination of alternatives.

While this element of the plan illustrates options available to the residents of Cobb Neck and the County Commissioners, the ultimate means selected to preserve farmland in Cobb Neck is a decision to be made jointly by elected officials and area residents (particularly area farmers). Their decision must be both legally defensible and politically acceptable.

The following plan recommendations are intended to facilitate a process for making decision's concerning the selection of the most appropriate means for achieving the farmland preservation objectives in Cobb Neck.

- Some form of land use control through zoning is clearly the most effective and affordable means by which farmland can be preserved in Cobb Neck.

- Selection of a combination of zoning tools or techniques is likely necessary rather than selection of only one technique to preserve farmland in the study area. Techniques recommended as best suited for the area for consideration and discussion by area residents include:

    - Area-based density zoning

    - Performance Zoning

  These two techniques achieve protection of the Necks critical mass of farmland yet permit farm owners development opportunity options.

- Sliding Scale zoning is recommended for application on small farms where performance zoning or Fixed area-based density limits are overly restrictive when applied to small farms. Small farms (under 40 acres in size could also conceivably be receiving areas for transferred development rights although their development introduces greater potential conflict between farm and non-farm residential uses.

- The transfer of development rights should be considered in conjunction with the zoning approach selected, but only in the context of planning and zoning for the entire County. This

concept permits financial return to the farm owner without creating lots in areas incompatible with farming activities. However, receptor zones for the development rights purchased would likely be County area's north of Cobb Neck. Their selection requires Comprehensive Planning for their location which can be accomplished in the coming year as part of the County Comprehensive Planning Process.

- Both area farmers and other residents of the neck should be the primary actors in selecting the means by which zoning techniques are combined to preserve farmland resources. If crafted in the context of farm resource protection Countywide, other County farmers should also be participants in the process.

- Techniques to preserve farmland should not be limited to zoning alone. Additional techniques might include abatement of property taxes in Agriculturally zoned districts since public service's are not demanded absent significant levels of development.

- Planning efforts to increase marketing opportunities for farm products and to maintain agriculture as a component of County economic development programming efforts are requisite to industry protection while zoning protects the land base which is only an industry component.

- Areas of Cobb Neck considered appropriate for Agricultural protection are identified on the Land Use Plan Map. Preservation zoning techniques applied within these areas may differ to the degree to which alternative approaches are determined acceptable among the residents and farmers in different areas.

In final analysis, techniques for preserving farmland in Cobb Neck can be better defined and framed at a Countywide level rather than isolated in their application to Cobb neck. Countywide zoning techniques meet legal uniformity requirements and permit a better focused assessment of opportunities to protect farmland in other areas of the County where it is a dominant land use.

COBB NECK MASTER PLAN
NATURAL RESOURCES PROTECTION IMPLEMENTATION
OPTIONS ANALYSIS

INTRODUCTION

The natural environments of Cobb Neck manifest a diverse base of resources which in turn support a variety of habitats for plant and wildlife communities throughout the Peninsula. These diverse environments greatly contribute to the overall beauty of the area which is a significant component of the Cobb Neck's visual quality and character.

Despite a continuing debate concerning the degree to which the natural environment should be subjugated to the needs and desires of people, there are very few people who have experienced some part of nature's offerings available on Cobb Neck who do not appreciate the environmental amenities of the area. The wildlife, plant, land, and water resources of the Neck have historically been a source of income, enjoyment, and sense of well-being for numerous generations and that sentiment has been widely expressed by residents of the area through public forums.

The Cobb Neck area residents have identified issues of concern and established objectives for this plan to protect and enhance the physical characteristics of the natural environment on the peninsula. The purpose of this section of the Plan is to: identify those physical features which are major components of the peninsula's natural environment: discuss their importance and need for protection; and outline optional zoning and non-zoning means of implementing protection policies. Some of the protection techniques discussed are already initiated through established County Zoning and Subdivision Regulations and more recently through overlay zoning applied to the County's Critical Area including Cobb Neck.

THE FRAMEWORK FOR COBB NECK RESOURCE PROTECTION

The environmental protection problem is very similar to that faced in agricultural preservation in that it sets two opposing views about land use against each other. We can all agree to objectives that call for the protection of natural resources, yet, if it is our own land on which development is severely limited, then we evoke the rights of property owners with equal vehemence. Conventional responses have heightened these conflicts by focusing on "density" and "lot size" as the standard for environmental protection. Worse yet, there may be little direct connection between the zoning standards of density or lot size and the local environmental protection objectives to be achieved.

There are major differences between resource preservation and agriculture preservation which make separate treatment of these topic areas logical. Agricultural lands are preserved for active use by man to produce crops, and hence have a significant and immediate land use value. Most natural

resource areas are preserved by leaving them, in whole or in part, in a less disturbed state, and thus do not have the same use value. Thus, the direct immediate economic benefits associated with the protection of the Cobb Neck's natural resources are less than those produced by protecting agriculture. The second major difference is the amenity value that many natural resources have in the residential market place. These values make them premium house sites, and some waterfront locations are ideal for recreational and water-dependent uses, such as marinas, that create higher land values for development. Together, these differences greatly complicate many efforts to protect natural resources.

When planning the County's future land use it is very important to consider the management objectives for each resource and to carefully and precisely delineate the connections between land uses and environmental effects. Separating the issues associated with agriculture preservation from the issue of resource management avoids the cardinal error of mixing two environmental objectives that have internal conflicts. For example, agriculture is clearly one source of nutrient loadings and sedimentation in the Wicomico and Potomac Rivers. Preserving good water quality and intensive agriculture are not always mutually compatible goals and thus deserve separate consideration.

The resource management issues in Cobb Neck are similar to those that exist throughout the nation. In order to form a rational approach to addressing these issues, resource management objectives should be based on the results of substantive environmental analysis and should distinguish between different resource categories (i.e. woodlands, flood plains, and non-tidal wetlands) and their locations (i.e. aquatic versus land environments). Most crucial of all is the understanding of the systemic and cyclical aspects of environments. Since each element or environmental unit is a component of one or more systems, protection of its function is more important than protecting it solely for its own sake. Various essential components of life move through a cycle whose operation must be maintained.

An appropriate basis is required for zoning, and in environmental protection it is essential that the standards be soundly based on scientific fact. We have, therefore, developed a system of classification, which evolves from the discussions of various features of the Neck described in the background studies and analysis section of the plan (see Parts I and II).

At the simplest level, Cobb Neck is divided into two site regions: water and coastal plain. The State of Maryland Water Resource Administration, U.S. Corps of Engineers and U.S. Coast Guard control structural activities in the Potomac and Wicomico Rivers and their tributaries. Only in the very near-shore waters does the County have any regulatory role. Thus, except for a concern for the impact of land uses on adjacent rivers and tributaries and the location of water-dependent land uses, there is no attempt to plan for water bodies surrounding the peninsula. We furthermore propose classifying the land environment into three physiographic complexes: Critical Area, upland, and agricultural. The

distinction between uplands and agricultural areas is based on the premise that preservation of farm land is of greater importance for its agricultural benefits than other competing uses. Some of the following resources or environmental attributes may occur in each of these 3 physiographic complexes:

* Steep Slopes
* Floodplains, coastal
* Floodplains, inland
* Wetland, tidal
* Wetlands, non-tidal
* Drainageways
* Water Resources and supply
* Forest and Woodland Resources
* Unique Habitats of Concern
* Soils with Development Constraints
  - Unsuitable for Septic Systems
  - High Erodiability and Runoff Potential
  - Hydric
* Bluffs and Eroding Shorefronts

Each of these resources is a component of the overall resource base of Cobb Neck. These environmental units have varying degrees of sensitivity to disruption and therefore may require varying degrees of protection. The performance standards option referenced later in this section of the plan provides a recommended means for protecting each resource. Other options afford a legitimate means of providing for resource protection in a somewhat simpler but coarse scale.

RESOURCE PROTECTION PLANNING CONSIDERATIONS

How many people or houses can be located on Cobb Neck before water quality or air quality becomes insufferable? Could we institute development controls or build a sewage treatment plant in time to ward off problems? How do we measure the trade-offs between growth and environmental quality? These are the kinds of planning questions that must be addressed to reconcile which resources are to be protected and how their protection can be best achieved. To facilitate thinking about how answers to these questions can be approached a discussion of the concept of "carrying capacity" is in order. Carrying Capacity is a concept which is based on the premise that there are limits to the amount of growth certain areas can withstand without serious impairment to public health and safety or to the natural environment. Residents of Cobb Neck, in particular, have expressed concern about both the quality and quantity of future potable groundwater supplies. Greater protection of the peninsula's resources, particularly forest cover which minimizes surface water runoff permits greater opportunity for recharge of groundwater supplies. Likewise, management of the area's growth affords greater opportunity to isolate the distribution of land uses which may impair water quality.

Carrying Capacity

Carrying capacity was originally associated with ecosystems management. It was defined as the maximum population density for a given species in an environment which could be supported without degradation of that environment. In land use planning and growth management, the use of the concept is more recent. Planners have enlarged the definition to include the many variables inherent in man-made systems. Carrying capacity, as the term is generally used for purposes of this plan, may be defined as the ability of a natural or man-made system to absorb population growth or physical development without significant degradation or breakdown.

Carrying capacity analysis, as a planning tool, studies the effects of growth -(amount, type, location, and quality) on the natural environment in order to identify critical thresholds beyond which public health, safety, or welfare will be threatened by serious environmental problems unless changes are made in public investment, governmental regulation, or human behavior. Certain assumptions underlie the use of the concept in planning. These are:

1. *There are limits to the amount of growth and development the natural environment can absorb without threatening public health, welfare, and safety through environmental degradation.* Emphasis on the Cobb Neck environment's ability to withstand development as a prime consideration in land use planning represents an important reversal in thinking about growth. Previously the development community and much of the planning community had seen the job of land use planning as the accommodation of growth. The new attitude was popularized in the early 1960's, and is one of the main premises of carrying capacity studies.

2. *Critical population thresholds can be identified beyond which continuation of growth or development at greater densities will trigger the deterioration of important natural resources such as water or air.* Definition of population thresholds or densities, which can be different for each resource considered, is the principal output of many carrying capacity analyses. These thresholds can be viewed as population caps, but more frequently they are used to indicate stages in a community's growth when important decisions about accommodating growth must be made. For example, in comparing population projections with a population threshold which would threaten a serious decline in water quality in the Cobb Neck area, we can better focus on the year(s) in which new wastewater treatment facilities may have to be built above and beyond those currently planned on Cobb Island. Conversely, if such facilities are resisted or too costly, a limit for population growth within which such facilities are adequate must be considered.

3. *The natural capacity of a resource to absorb growth is not fixed, but can be altered by human intervention.* The fact that local governments have the ability to affect carrying capacities through public investment in water treatment facilities, for example, is a very important point made by those who use the carrying capacity concept in planning. These planners point out that there are a number of ways of increasing the natural environment's capacity to support growth - such as new pollution control technology, land use regulations, investment in public facilities or services, or changes in human behavior. These kinds of adjustments though sometime costly, can effectively reduce the impact of growth on critical resources in Cobb Neck such as water supplies and thus expand the peninsula's ability to accommodate growth.

4. *The determination of the limit of capacity of a given system is, finally, a judgmental act.* Although grounded in scientific and engineering principles, choice is still required to draw the line between a "safe" and an "unsafe" and an "acceptable" environment. The County, depending on its values, can respond in a number of ways to the threat of environmental degradation such as reduced water quality in Cobb Neck. For example, it can institute development controls to reduce non-point-source water pollution; it can expand sewer treatment facilities to bring water quality to a given level; it can redefine its criteria for water quality; or it can refuse to intervene at all and accept a certain amount of water quality degradation. Because of its origins in the natural sciences, the term carrying capacity suggests an objectivity and precision that is not warranted by its use in the planning community.

The notion of carrying capacity usually focuses on natural systems. Man-made systems are also obviously characterized by limited capacity to provide service. Critical population thresholds can be developed which indicate where too heavy a demand is being made on man-made systems, just as it can be developed for natural systems. Such systems as road networks, water and sewer systems, and solid waste disposal, for example, can be seen to be particularly vulnerable to unlimited growth and development.

One result of analyzing the effects of land development on natural systems is the institution of land use controls that restrict development in particularly fragile or important resource areas, like wetlands, and set performance standards and density controls in other areas. The purposes of these development regulations are to minimize adverse environmental impacts such as erosion or water pollution.

The underlying theme for consideration is that the natural environment has a limited ability to withstand different types or intensities of use. Some areas are more suited to different land uses and intensities of use then are others, and there os a fundamental need to direct new development to

the most appropriate places and to control its intensity if resource protection is to be achieved. Techniques which form the basis for these land use decisions are often called land capability/suitability studies, rather than carrying capacity analyses, and refer to the capacity of different areas to absorb development. Among the implementation techniques presented in this section of the plan there are several examples which are fundamentally based on the concept of carrying capacity.

In discussing the drawbacks to the use of carrying capacity in planning for Cobb Neck, a distinction should be made between the technical process of performing the analysis and the application of it. In the analysis itself, the main problems are the financial and technical requirements. In the applications, particularly those having to do with growth management, the drawbacks are political and legal. Tackling the technical requirements first, it is clear that there are no standard ways of conducting carrying capacity analyses and no universally accepted guidelines on how to do it.

Carrying capacity analyses vary in difficulty, depending upon the complexity of the analysis attempted. Methods for measuring capacity range from subjective interpretations of natural resource inventories to simple arithmetic calculations to complex computer modeling techniques. There are usually many variables involved about which different assumptions must be made. Just as in any analysis, the variables selected and the assumptions made greatly influence the reliability of the results and the use to which they can be put.

For example, in determining the population Cobb Neck can absorb without experiencing a decline in the quality of its water, a number of important decisions and assumptions must be made. Will the effects of growth in adjacent areas of Charles County be considered? How? Should future changes in patterns of effluent discharge for present residential, commercial, or industrial developments be considered? Or will only the effluent generated by new residential growth be considered? What population density can be supported by undeveloped areas that are suitable for septic tank systems? What will be the capacity of the sewage treatment plant to be located to serve the Island? What will be the plans for its future expansion, and how much more effluent will it be able to treat? How many residents will that permit?

While the variability of the assumptions used to measure carrying capacity make the process technically difficult, this same variability is what makes the analysis an attractive tool for planning. Any number of trade-offs and alternatives can be defined by experimenting with ways to alter capacity estimates. The danger lies in not recognizing the tenuousness of carrying capacity conclusions and mistaking them for finite limits or thresholds rather than estimates or ranges. People who are unfamiliar with carrying capacity analyses can be misled, either innocently or deliberately, into thinking that the results of carrying capacity analyses are more concrete than they actually are.

Given the drawbacks of using a pure carrying capacity analysis as a means of protecting Cobb Neck's environmental resources the best means of using such a tool is to first determine the resources to be protected and then establish a protection level for each resource or environmental attribute. Once protection levels are established they can be used to influence the density of development or at least require clustering to insure their protection levels are maintained.

Point and Non-Point Source Pollution

As can be seen in Table 1, certain land uses that can be located any where within the Neck can significantly impact the Bay with higher pollutant loadings if served by sewer systems which outfall treated waste to adjacent tributaries.

TABLE 1
Point Source
Phosphorus Loading
Pounds/Acre/Year

Dwelling Units/Acre	System* Secondary Treatment	Sewer System* Tertiary Treatment	Land Treatment	Septic
8.0	40.	10.	0	nf
4.0	20.	5.	0	nf
2.0	10	2.5	0	nf
1.0	5	1.25	0	0**
.5	2.5	.625	0	0**
.2	1.0	.25	0	0**

* Assumes 75 gallons water used/person/day; 3 person per unit, nf = not feasible.

** Some increase in non-point loadings will result.

Consequently any use serviced by a conventional sewer system is going to have a direct adverse impact on water quality regardless of whether it is in the Critical Area (coastal location) or located inland. The most effective planning strategy would be to transfer portions of the existing developments that contribute to point source pollution from a discharge plant to a land treatment plant. The second most effective strategy would be to upgrade from existing secondary treatment to tertiary treatment. 201 Facility Plan for Cobb Island has identified land treatment as the preferred alternative to a point in the Potomac River.
In actual practice however, development where sewer facilities exist or are planned in the future (e.g., Cobb Island) which are often in the Critical Areas of Cobb Neck, is far more cost-effective than moving development inland. Moreover, existing septic systems failures on Cobb Island are a problem which requires solutions. However, additional development on the

Island may jeopardize protection of resources, more of which are concentrated at the southern end of the peninsula than in any other portion of the Study Area.

Any comprehensive strategy addressing non-point source pollution in Cobb Neck should protect existing forest cover. With 45 percent of the Neck in forest cover, the area currently benefits from the low level of nutrient loading which forest lands affords as shown in Table 2, taken from the Synthesis of the EPA Chesapeake Bay Program Technical Studies. The range of non-point source nutrient contributions from different land uses are also shown.

TABLE 2
Non-Point Source

	1lbs/ac/yr/Phosphorus	1lbs/ac/yr Nitrogen
Forest	0.1	2.4
Pasture	0.5	5.9
Cropland	1.8 - 4.9	10.5 - 21.2
Suburban	0.9 - 1.6	6.5 - 11.9
CBD	2.7	24.6

Source: Northern Virginia Planning District Commission, Metropolitan Washington Council of Governments.

Natural resources have different sensitivities to different land uses. As can be seen from Table 2, forestry would clearly be the best use for protecting water bodies from polluted run-off while agricultural and central business districts generate the highest pollutant loading. While conventional residential uses fall in between, it is clearly possible through clustering to tailor residential development to maintain water quality impacts within acceptable levels. Some land uses, marinas for example, are water-dependent and must locate in shoreline areas; albeit, a range of impacts to resources may result from their siting, design, and operational features.

A given resource may have positive or negative values depending on the specific environmental unit. For example, a stable shoreline with a wetland fringe is beneficial to the Bay, while an eroding shoreline having a bluff may be as damaging to the Bay as a development many times greater in area. In such cases, development at a density which makes it economically feasible to install expensive erosion control structures is more responsive to stabilizing the shoreline. Retaining the shoreline in its natural state or in agricultural use provides no economic incentive or base for underwriting the expense of erosion control, and consequently the shoreline will continue to erode. If shorefronts are wooded, erosion results in a concurrent loss of forest cover and plant and wildlife habitat.

Legal Issues

Since actions to protect natural resources ultimately may result in more restrictive zoning than presently exists in Cobb Neck, an understanding of the legal aspects of implementation is desirable.

One test of environmental regulations is whether the cost of environmental protection to the landowner is commensurate with the results in immediate and future public benefits. From the landowners perspective, if the objective of the regulation is to reduce sedimentation of the Bay, and the site requires extensive erosion control along the shoreline, the owner/developer must realistically be able to recoup those costs from the sale of building sites. However, if environmental regulations unreasonably restrict densities, the developer will not be able to install adequate erosion controls, and the environmental objective will not be met. If the site in question contains an eroding peninsula which protects leeward lands, once the point of land has eroded away, lands located to the lee side of the peninsula come under more severe attack by wave action. Thus, permitting the owner greater development density or site planning flexibility may over the long term benefit wildlife habitat and water quality objectives both on-site and on adjacent sites.

Environmental regulations usually result in restrictions as to what can be done with a property. Therefore, care should be taken to insure that regulations are legally defensible.

The practice of large and very large lot zoning has resulted in the creation of exclusionary zones where only limited economic groups have access to housing. If land use regulations inadvertently create a "snob" zone of high land values, then it may be argued that the rights of low and medium income persons to locate in these areas of Cobb Neck are being violated.

Likewise, protection of resources must be balanced against other Study Area objectives. For example, residents are concerned about access to housing for its low income population. This housing objective may not always be fully compatible with desires to protect the agricultural and environmentally sensitive areas of the Neck. There is very little land on the peninsula that does not fall into one of these two categories. Special care must, therefore, be used to insure that the resource protection and agricultural goals do not, in fact, create a situation where the lower and moderate income residents of the community are excluded from the community.

ALTERNATIVE RESOURCE PROTECTION TECHNIQUES CONSIDERED FOR APPLICATION TO COBB NECK

There are a variety of techniques that can be used to protect Cobb Neck's natural resources. They are primarily zoning techniques, although there are some that can be incorporated into subdivision regulations. There are four (4) different approaches that can be used as well as several other techniques:

Zoning Techniques
Conservation Zones
Overlay Zones
Cluster and P.U.D Zoning
Performance Standards
Other Techniques
Environmental Impact Statements
Transferable Development Rights
Land Use/Growth Management
Sewer Planning
Mitigation or Impact Fees

Each of these will be discussed in the following sections. In some cases, there will be several variations examined in order to fully explore the possibilities of that technique.

DISCUSSION OF OPTIONAL RESOURCE PROTECTION IMPLEMENTATION TECHNIQUES

Conservation Zones

Conservation zones share a number of common characteristics. The primary characteristic of all of these zones is their reliance on lot size or density to limit the impact on the resource.

Conservation zones are a traditional zoning district approach to resource protection that has limited potential. One of the major problems with this technique is that it has little connection with preserving most resources. It can easily be argued, as the Maryland State Planning Office has in their publication "Land Use and Abuse, 1985", that, in many instances, increasing the lot size does nothing to preserve the resource or limit adverse impacts. The increased length of roads associated with such developments may, in fact, result in a greater disruption of the resource than other forms of zoning. The degree of disruption for lawn and house area is very likely to double as lot size doubles, up to lots of four to five acres in size. Thus, the disruption of the environment is not clearly related to the lot size selected. The net result of the failure of large and very large lots to clearly relate to the desired environmental objectives is that conservation zones are more susceptible to the arbitrary and capricious challenge than other techniques.

In reviewing conservation zones, they appear to work best when there is a single uniform resource. Thus, conservation districts have been most frequently used for agricultural preservation where the farm unit can be reasonably related to the size of a minimum lot. Where there are many different types of resources, a single conservation zone cannot be designed to meet the needs of each resource. Resources in Cobb Neck occur within different physical and economic contexts. Woods occur along the shoreline, streams, and on uplands. Different protection levels may be appropriate due to differing environmental factors, as well as the changing economic value of land in different parts of the Neck.

Conservation zones in and of themselves are very coarse protection measures that are not well-suited to meeting the unique needs of real ecological units. A farm is a monoculture and an single classification works both economically and ecologically for the farming industry. The coastal and upland environments of Cobb Neck that need protection for nonagricultural reasons are very complex and diverse. The course grained lot size approach ignores the environmental dynamics and focuses on a traditional land use control rather than environmental protection.

Overlay Zone

The overlay zone has been used with some success as a means of protecting desirable environmental attributes (especially floodplains) in Maryland and throughout the country. The overlay zone is normally established to protect a single resource, which is to be protected through the creation of a zoning classification that overlays the base zoning district, whether it is residential or commercial, industrial or agricultural. That district is mapped to coincide with the resource throughout the jurisdiction. The overlay district is superimposed over the existing zoning districts wherever the resource is present. Regulations that accompany the overlay zone provide additional environmental safeguards above and beyond those that would normally be applied by virtue of the underlying zoning district requirements, by restricting the permitted uses to a limited number or requiring special construction techniques. The overlay zone technique is most widely used to protect floodplains or drainage corridors. Since these areas are both environmentally sensitive and also pose the risk of loss of property to those that live there, there is a obvious logic to designate all such areas for protection.

This technique works where there is a single resource needing a common level of protection. It requires a different overlay zone for each resource to be protected so that the management practices can be tailored for each resource. The technique looses its rationale when applied to a resource that is actually composed of many discrete resource management units. Despite this, many counties in Maryland have applied overlay zoning as a means to establish development regulations for lands within 1000 feet of tidal waters in meeting the requirements of the Chesapeake Bay Critical Area Program.

Actual development standards which would be applied within an overlay district would be a more complex undertaking to develop if they are to be tailored to the unique needs of the resource to be protected. In practice, any form of zoning district, conditional uses, or performance standards may be used with the overlay zone. Its major drawback is the complexity of accurately mapping a large number of different resource management units.

The successful application of the "overlay zone" technique cannot be readily evaluated if it effects many different standards for land use and protection of the environment. Each standard must be evaluated separately and the overall benefits and costs must be judged while considering the purpose of the regulations.

Cluster, P.U.D. Zoning

Cluster zoning provisions attempt to manage environmental impacts by density, not lot size. Thus, the lots can be clustered to avoid building on unsuitable or environmentally sensitive areas of the site. A planned unit development process adds the requirement that the developer goes through a conditional use or rezoning procedure that permits the County to tie the use of the site to a specific site plan. The theory of both these techniques is excellent: locate the dwellings on portions of sites in Cobb Neck where they do the least damage.

The problem is that the use of density is at best a surrogate for environmental impact. If the impact were to have a direct relationship solely to the number of dwellings and no relationship to the manner in which the dwellings were placed on the ground, then clustering and planned unit development would be no better than straight zoning. The fact is that they do produce different results based on the site design of the project. Consequently, these provisions will only be as good as those elements of the regulation that deal with site design requirements to protect resources.

In theory, the planned unit development process permits the County to attach additional conditions to the site plan to eliminate these problems. In practice, the criteria or standards for approval in many jurisdictions have been too vague to insure the desired results or too rigid to permit good design. The waterfront planned community district appears to be too open ended at this time. The process depends largely on the quality of the review board, the preciseness of the standards, and the ability to quantify the level of protection. While some very good developments have occurred under planned developments, so have some of the greatest travesties. It is our experience that the best examples of cluster or planned development originate not with the local regulations but rather with a determined developer who insists on quality. Many developers realize higher returns on investments with environmentally sensitive site plans due to enhanced amenity values. Thus, while the theory of very low density clustering suggests opportunities to protect resources, without design standards such protection is not likely to materialize.

Performance Standards

This form of zoning was developed in large measure to provide an alternative to both traditional zoning and non-zoning approaches that would indeed protect environmentally sensitive lands. Performance standards contain built-in safeguards to protect natural features. Such standards would be applied to all of the types of resources albert in sometimes different ways depending on the resource. Many of these performance standards are applied in terms of a specific protection level assigned to each resource and related to the general physiographic complex in which it occurs.

TABLE 3
COBB NECK
RECOMMENDED RESOURCE PROTECTION LEVELS

	Critical Area	Upland	Agriculture
Floodplains	100%	100%	100%
Wetlands, tidal	100%	na	na
Wetlands, non-tidal	100%	100%	100%
Drainageways	50%	30%	00%
Forest, young	50%	40%	00%
Forest, mature	80%	70%	50%
Old Fields	20%	00%	00%
Farm Fields	00%	00%	90%

A second type of performance standard applies not to a resource, but to natural cycle or function that may be disrupted by development or other disturbances. While the identification of protection levels helps reduce impacts, it is also desirable to address the specific functions and the effects of development that creates problems. For example, storm water runoff is an environmental problem that can be managed using specific standards to retard peak flows or to reduce the pollutant loads carried by the stormwater.

Performance standards have a tremendous advantage in that they apply not to the zoning district but to discrete environmental units. Unlike the overlay zone with can also be applied to environmental units, there is not the need to map each resource. This means that the resource protection scheme can be tailored to meet the needs of very complex environments on Cobb Neck and protect them in a variety of zoning districts.

The use of performance standards also allows specific measures to be instituted that focus on density, open space, or impervious surfaces, whatever is the most appropriate to the task. Administrative authorities can use Performance Standards to calculate the maximum allowed impact and then to enforce regulations that insure that the desired impact cannot be exceeded as future development occurs.

Most conventional standards in the form of setbacks can be integrated into a performance standards system. In some cases, a prescriptive setback in the form of a minimum distance for a given environmental feature (by way of example, no structures within 100 feet of tidal wetlands) may be appropriate and considered suitable to provide adequate protection. In other cases, the distance between a development-related use and environmental features, such as wetlands, may be less important than the manner in which the use is designed and constructed.

Given the ability of a performance standards approach to reflect the inherent capacities and constraints of a given site to support or limit its development potential, such standards appear to be a most appropriate means for providing protection of environmental features in Cobb Neck. Also, performance standards can be directly related to phosphorous and nitrogen loading impacts by land use, and thus their effectiveness can be quantified. In terms of the degree of protection afforded the Bay, the reduction in property value, and the ability to pay for the required mitigation measures, performance zoning provides a mechanism where the County can, in fact, balance the impacts so that both the environmental objectives and a desire to respect the rights of individuals can be fairly balanced.

Environmental Impact Statements

With the sudden advent of a strong environmental protection stance by the Federal government, most state and local governments found themselves without adequate planning or regulatory techniques to deal with environmental goals. The most common response was the adoption of regulations requiring an environmental impact statement to be prepared to assess any environmental impacts and to select the best course of action from several alternatives. The system is less a regulation of the land than a process for arriving at a decision. It is an ad hoc process that requires the developer to collect a variety of data, test alternatives, and present findings on the environmental impact. Public hearings are held, and citizens or other interested parties are also permitted to submit evidence. The appointed or elected officials must then sort through all this and either accept the statement, modify, or reject it.

The ultimate problem with this technique is that it is inconsistent in its ultimate results. The quality of the information gathered is going to vary substantially depending on the individual doing the work. The interpretation of the data is clearly influenced by the objectives of those interpreting it. The developer and neighbors nearly universally come to opposite conclusions regarding the implications of the data. The personalities of witnesses, lawyers, and others can have an impact on how the information is viewed. Lastly, the turnover of people doing the evaluation will clearly have an impact on the outcome.

The second major problem is that the cost of running this type of system is greater than other alternatives. The developers, government, and citizens must all share these costs. The preparation costs for the

developer can easily double the cost of making an application. Citizen groups must hire attorneys and experts of their own to review the material. While it was originally envisioned that the elected officials would simply sit and listen, the complexity of the issues demand that the community hire its own staff with expertise in these areas to sort through the complex and conflicting testimony that often arises. Therefore, Impact Statements as a rule do not appear to be a sound means of assuring resources in Cobb Neck are afforded protection.

Transferable Development Rights

The concept of transferring development rights (TDR), outlined in the Agricultural Section of the Plan, essentially can take three forms. In one case, the rights of a property owner who may own several parcels can be transferred in such a way as to increase densities on a parcel most appropriate for development, while trading-off the development potential of other properties commonly owned. In the second form, by sale or other agreements, several owners may agree to a density transfer. Both of these forms are voluntary, while the third form is mandatory, requiring some landowners to sell and purchase their rights in order to realize any development value from their property.

While the voluntary system is not market-dependent for its legal workings, its ultimate performance in achieving the desired goal is sensitive to the market. The voluntary systems have one advantage, on those properties involved they promote an area that is large enough to be used for either agriculture or a wildlife habitat.

Finally, given the relatively low volume of absolute growth in Cobb Neck, it may be difficult to protect any significant area of environmental resources using transferable development rights in any of its forms. Therefore, the tool seems to offer more potential when accomplishing Agricultural Preservation objectives or when viewed in the context of County rate application where Northern County receiving areas may exist.

Sewer Planning

The impact on the water quality of the Bay is, as it turns out, largely dependent on the methods of sewer disposal. A prime contribution to the degradation of the Chesapeake Bay is the effluent from treatment plants. Even with significant improvements in wastewater treatment, including phosphorus and nitrogen removal, the loadings are much greater from the dwelling than from land application treatment. EPA study projects a 43% increase Bay-wide in phosphorus loads (from 1980 to the year 2000) due to population growth and land use changes. A suburban environment contributes 21 pounds of phosphorous per acre per year from both point and non-point sources when secondary treatment is used. By going to tertiary treatment, a 70% reduction in loadings is achieved. Further, the reduction occurs for all development in the Chesapeake Bay watershed, whether it is in the critical area or not. It is unlikely that large portions of the Cobb Neck's point source loads can be converted to land applications systems; however, the State of Maryland should actively

encourage the use of such systems in Charles County, for future development and adhere to the current plans to land apply the effluent.

Mitigation Or Impact Fees

Mitigation is a concept that permits development to occur if the degraded habitat is improved. Throughout the country, most of the original climax forests and many of the streams and drainageways have already been modified by a man. Farms and artificial drainage ditches have replaced the original environments and habitats. While there is concern with the development of these areas, much of their environmental value was destroyed long ago. Cobb Neck is no exception, for much of the coastal environments that once supported the rich diversity of the hard wood climax forest have been in some way disturbed. Floodplains and drainageways that permitted water to move only slowly over land have been modified to speed the flows, upsetting the natural regime of streams.

In the process of development, performance standards can be applied that will mandate mitigation techniques that improve the overall quality of the land as a habitat for both wildlife and people. Where a channelized stream crosses a property to be developed, the artificial channel can be regraded to provide for natural meanders, more flood storage capacity, and less velocity. The channel can be revegetated with materials that trap nutrients and pollutants. Areas can be revegetated with plantings of grasses and wildflowers, as well as understory trees and shrubs and canopy trees. Even with a portion of the site being developed for residential purposes, the total area of high-quality habitat can be increased, and the quality of the area, as a whole, enhanced as wildlife habitat. These enhancements for wildlife habitats will increase the diversity of species, provide better cover and feeding environments, and, at the same time, reduce the pollutant loadings to adjacent rivers.

Mitigation can also be used in areas where there is too little land to impose the desired performance types of controls. The need for this type of mitigation occurs because the vacant lands are in partially developed areas where there is insufficient area or width to provide adequate setbacks or insufficient area to preserve the habitat in the manner that is deemed most effective. In these cases, the strategy may be to require impact fees that are to be used elsewhere to enhance protection at critical locations rather than the site on which the development occurs. Where it is possible to increase the overall environmental benefits to the peninsula or County beyond, such techniques should be encouraged.

Land Use/Growth Management Objectives

Besides meeting environmental and legal performance criteria, environmental regulations must also be considered within the context of all of the County's growth management objectives. They should encourage development patterns which support cost-effective facilities planning and land use patterns that are consistent with existing development to the extent possible.

If environmental regulations result in major location shifts in future development patterns that tend to create longer service lines for public facilities and require major adjustments in the County's facilities planning program, the value of environmental benefits may be greatly exceeded by higher facilities costs. For example, sewer collectors can currently be run off the existing interceptor lines to service development albeit in areas where environmental resources may exist. If development is forced further inland as a result of environmental regulations, long extensions of the existing interceptors and/or new or additional treatment capacity will need to be built in different locations in response to the new development pattern, resulting in substantial increases in cost.

In addition, the regulatory approach must recognize existing environmental problems of malfunctioning septic tanks and groundwater quality and quantity concerns. Nonconforming lots, i.e. those lots already platted and/or developed at much higher pre-regulation densities in existing developments, must either be down-zoned or provided with utilities. If sewer is available, then intervening vacant land should also be considered for development in order to create a cost-effective means of reducing existing problems.

RESOURCE PROTECTION FINDINGS AND RECOMMENDATIONS

Findings

The overriding considerations relative to resource protection in Cobb Neck appear to be as follows:

* Area residents are quite concerned about Resource protection particularly protection of potable water supplies, marine resources and fisheries which support a component of the Necks economy and character.

* Major investments in infrastructure to support development in Cobb Neck may be designed to permit growth in a way that maintains environmental qualities but can hardly be justified in light of the greater growth pressures in Northern County areas and the greater existing demand for investment required to support it in these other County areas. (Witness the transportation needs prompted by growth in the Waldorf Area of the County.)

* The Cobb Neck area residents are interested in protection of not only environmental resources but rural character and qualities and protection of the farm industry as well. These objectives taken together are mutually compatible if growth can be managed and diverted to areas better suited to support it.

* Cobb Neck, unlike other County areas is surrounded by the Chesapeake Bay Critical Area and estuarine resources in the form of shellfish harvesting beds, fisheries, and related resources. By virtue of it's location and shape, the Neck bears

a unique relationship to these resources and greater responsibility for their stewardship.

* Continuing growth pressures in Cobb Neck and Charles County will exert influence on future County character. The likely result will be a continuing reduction in the overall extent of farm and woodlands land cover County-wide. Such changes represent not only reductions in Natural and Cultural environmental resources but reduce the amount of open space usually important to residents sense of place. While managing the form of development by encouraging cluster for Planned Residential and Waterfront Planned development may preserve patches of open space on specific sites, it fails to preserve significant resources on a larger scale County-wide. The current rate of development and land conversion supports the need for a broader preservation perspective in the County with focus on Cobb Neck before development pressures threaten to limit opportunities.

  Existing preservation programs in the County have been limited primarily to those which are State and Federally sponsored or are Quasi public/private Trusts established to achieve preservation objectives, often from a regional or Statewide perspective. Their mission complements county preservation interests but lacks focus at the County level. Rarely are they clearly targeted within the County's growth management planning framework. More often they are applied only when owner inquiry demonstrates interest in their application. Their larger than County geographic service area limits their ability to stimulate landowner interest or target specific areas for preservation within an overall County growth management framework.

Recommendations

* Establishing protection levels for specific environmental resources through performance standards on the Neck is the preferred means of zoning protection. Protection levels as identified in table 3 of this paper should be refined and incorporated in County Zoning and Land Subdivision regulations. Since zoning should be uniform County-wide, it may be necessary to postpone implementing this regulation until it can be evaluated in the context of County-wide Comprehensive Zoning revisions based on future update of the County Plan.

* Future development of the Neck should be concentrated in Village Centers identified in the Land Use element of the plan to reduce the level of disturbance to resources in other areas of the peninsula.

* The County should consider a transferrable development rights program in undertaking update of the County Comprehensive Plan for advantages in Resource Protection County-wide including Cobb Neck. This might permit designation of areas with particularly high resource values in Cobb Neck (e.g. special wildlife habitats of threatened or endangered species or large forested areas adjacent to Allens Fresh) as mandatory sending areas and thus afford them special protection while compensating land owners for the development potential of such sites.

* The County should strengthen adequate public facility provisions overall County-wide which designate urban or development growth envelopes in which capital facilities exist or will be provided. As embodied in the recently adopted Sewer Service Area Policy Statement. Rural and agricultural districts like Cobb Neck would also be identified, in which no capital facilities will be extended, thereby assuring resource protection in these County areas.

* The County should attempt to stimulate greater use of existing preservation programs and focus their application within Cobb Neck to supplement regulatory means of protection. Means by which this can be accomplished include:

  - Establishing an information clearing house within the office of Planning and Zoning to serve as a central point of contact for Cobb Neck and other County landowners interested in Preservation Programs. This institutionalizing of local preservation programming permits:

    a. Maintenance of information on Preservation Programs in a central place.

    b. Readier coordination between landowner and various organizations/foundations/and trusts which have easement interests. These include:

       - Maryland Environmental Trust
       - The Nature Conservancy
       - Natural Lands Trust
       - Maryland Historic Trust
       - Maryland Agricultural Land Preservation Foundation
       - Chesapeake Bay Foundation

  - Establish a forum for county stimulation of discussion with local conservation/preservation groups in establishing a Charles County or Cobb Neck Land Trust, or other supplementary vehicles as a means of augmenting preservation efforts. Advantages of land trusts include

assisting County offices in focusing preservation objectives within a County context and assisting County departments in achieving their respective preservation objectives.

It should be noted that landowners may be intimidated by the permanence of preservation easement programs. County organizational changes recommended herein permit discussion and consideration of means by which such fears can be overcome. These including facilitating the flow of information to property owners concerning, tax incentives and real implications of easement programs on development potential. Easements structured to permits limited development can overcome some of these limitations or fears. Structuring a pre-easement stage in the process toward securing easements (e.g. formation of a less permanent district similar to the Maryland Agricultural Land Preservation Foundation's (MALPF's Programs) can also permit a less formal period of familarity with program purpose and intent.

In summary, enhanced efforts to promote and secure Preservation easements can achieve Resource Protection benefits in Cobb Neck which may be greater than those accomplished through zoning alone. These include but are not limited to:

1. permanent protection of sensitive areas on the Cobb Neck peninsula;

2. protection of stable water supplies by limiting disturbance in recharge areas;

3. preservation of the rural character of the Neck;

4. maintenance of critical wildlife habitat; and

5. conservation of farm or forested lands.

PART IV
LAND USE PLAN CONCEPT

This Part include the Goals and Objectives to guide the Land Use patterns as well as a conceptual framework for land use district establishing future growth on Cobb Neck.

COBB NECK
LAND USE PLAN

GOAL:

To provide for a mix and distribution of land uses which complements the rural character of Cobb Neck and minimizes adverse environmental impacts to the peninsula.

OBJECTIVES:

To provide for containment of residential development in or near existing centers in serviceable form.

To encourage development only in areas where the transportation system can support it and sustain the movement of people and goods on Cobb Neck.

To enhance the identity of existing villages or rural service centers along the Maryland Route 257 corridor through Cobb Neck.

To curtail roadside or corridor development form which would adversely impact road system capacity.

To control the amount and distribution of development outside rural service centers or development districts to achieve agricultural preservation and resource protection plan objectives.

To establish guidelines for the location and design of future waterfront development in Cobb Neck to minimize impacts within the Critical Area and on the existing rural character of the peninsula.

To limit the location of non agricultural and non water-dependent industrial development to northern peninsula locations adjacent to the Maryland Route 301 corridor.

To encourage a form of industrial development in park like or campus like character or nature.

To provide for selective commercial needs in or near rural village service centers or Town Centers identified on the Land Use Concept Plan.

To establish design standards for Commercial uses which insure the scale of structures and quality of site planning/landscaping enhance the visual qualities, identity and sense of place of town centers and rural village service centers on Cobb Neck.

THE LAND USE PLAN CONCEPT

To implement the objectives established in this element of the plan a Land Use Concept Plan map has bee prepared to illustrate appropriate locations for future growth and development on Cobb Neck.

Town Center

A Town Center is identified at Cobb Island and adjacent areas where development at greater concentration has already occurred historically. This area can be characterized as having been developed historically at higher development concentrations than other areas of the peninsula. Planned investment in services to support development (e.g., sewer systems) occur exclusively in this area. Provision for limited development in areas served by the Cobb Island sewer service area should help to absorb the projected residential development for the peninsula. Intense commercial development on Cobb Neck should be concentrated in the Commercial Centers and the Newburg Village Center with commercial uses permitted in the Cobb Island Town Center to be those which directly support the needs of lower peninsula residents or the seafood and agricultural economics of the area.

Commercial Center

Highway commercial uses are recommended to be limited to major intersections such as Glasva and Newburg. Commercial uses are proposed to be limited to development parcels of five acres or more in order to achieve coordination of

development and shared access points and to prevent multiple access points onto the County's arterial road system. Commercial development prototypes illustrating the design and access efficiencies and amenities that can be achieved with the application of this principle are illustrated in the Land Use Plan. Industrial development which is not water dependent facility or Agriculturally related should be exclusively intended to select portions of the greater Newburg village center or the Glasva area.

The form of both commercial and industrial development should be controlled to preserve the highway systems capacity to satisfy traffic demands. Therefore, access controls limiting individual commercial and industrial use entrances should be established. Zoning in linear patterns parallel to highways should be discouraged with opportunities for non-residential development to be provided behind existing frontage of corridors already developed. Areas established for such development should be well buffered from adjacent highways a distance of between 100 and 150 feet with a combination of either earthen berms or landscaping established to protect and where possible improve the qualities of development such that the character of Cobb Neck is visually enhanced.

Rural Village Service Centers

Rural village service centers as identified on the Land Use Concept Plan Map are generally distributed in locations throughout the Neck and include Wayside, Thompkinsville and Mount Victoria. Newburg is also identified as a Rural Village service center although it is contained within greater development district which includes substantially greater area.

The concept of the village service center districts is created to provide designated areas for limited future growth and development on Cobb Neck which may not be absorbed within the Town Center and Commercial Centers. Many of these village centers are different in character ranging from being dominated by commercial uses to being more residential in nature. Some are little more than a crossroads on intersection settlement with little development at all at the present time. However, collectively they share certain common characteristics. Located at intersections of the Cobb Neck road system and generally near the center of the peninsula's length outside the critical area they become logical locations to support limited development. These villages acting as rural service centers are already in an established pattern and act as a component of Cobb Neck's character and quality of life. They serve to complement the development districts acting to receive less intensive development while at the same time remaining basically residential in character but containing a selective range of convenience commercial services to satisfy the needs of residents and surrounding forms or nearby residential developments.

Areas considered appropriate to serve this village role are shown on the Plan Concept Map. In the future, it is possible that additional village sites might be identified. However, at the present time their distribution and number are considered suitable to serve residential and commercial service needs of present and projected future residents of the Neck while reducing the pressures for development of farmland or areas of natural resource significance.

Even with development of these areas the scale and quality should be such that their present character can be preserved or enhanced so that they may continue to serve

their traditional roles. Therefore, areas designated as Rural village service centers should:

* remain small in population size

* remain small or contained in physical area

* be allowed to provide limited, highly localized commercial services (e.g., general store, gas station, farm supplies/hardware, etc.)

Neighborhood Conservation Areas

Neighborhood conservation areas or districts are proposed for residential subdivisions that have already been built out or lots of record have been established and development has partially occurred. In these areas residential densities are higher than those proposed in the Land Use Plan for Cobb Neck and their locational patterns of development are inconsistent with the planned pattern of land use to be encouraged. The plan proposes their designation where established development patterns have resulted in 1/2 acre to 2 acre lot subdivision form as a result of zoning ordinances established at the time they were developed. Areas designated Limited Development Area (LDA) under the County's Chesapeake Bay Critical Area Program are also included in this designation. This designation recognizes the existing developed condition of these areas and the investment made by existing lot owners in these areas. Infill development of vacant lots or land located between or among existing subdivisions would be the most appropriate location for future growth not contained within the Town Center or Rural Village Centers. Significant infill

residential growth potential exists in Cliffton and predominately in the Swan Point Waterfront Planned Community.

Agricultural Preservation Areas

Although most of the development in Cobb Neck is proposed to occur in the Town Center or Rural Village Service Centers, clearly some development can be expected to occur within Farm and Forest dominated environments on the peninsula.

The concerns of area residents, however, indicate the County should preserve the open, farm like character which prevails today. Likewise, protection of farmland is necessary to support the agricultural industry which is, in turn, a strong component of the quality of life on the neck. Therefore, agricultural preservation areas have been denoted on the Land Use Concept Plan Map. These areas include undeveloped portions of the peninsula in farm or forested land cover.

Development in these areas should be discouraged particularly on actively farmed soils. Generally any real effort to protect farmland will require changes in zoning which effectively reduce residential densities in these areas. The degree of zoning change however must be a function of political acceptability among farmers in the area. Clearly the County will need to recognize the value of farmland for development purposes (commodity value) in structuring implementation tools to protect farmland. Development in these areas should be located in cluster form on wooded portions of farms to permit some development opportunity to the farmer while retaining the Critical Areas of farmland necessary to sustain both farming

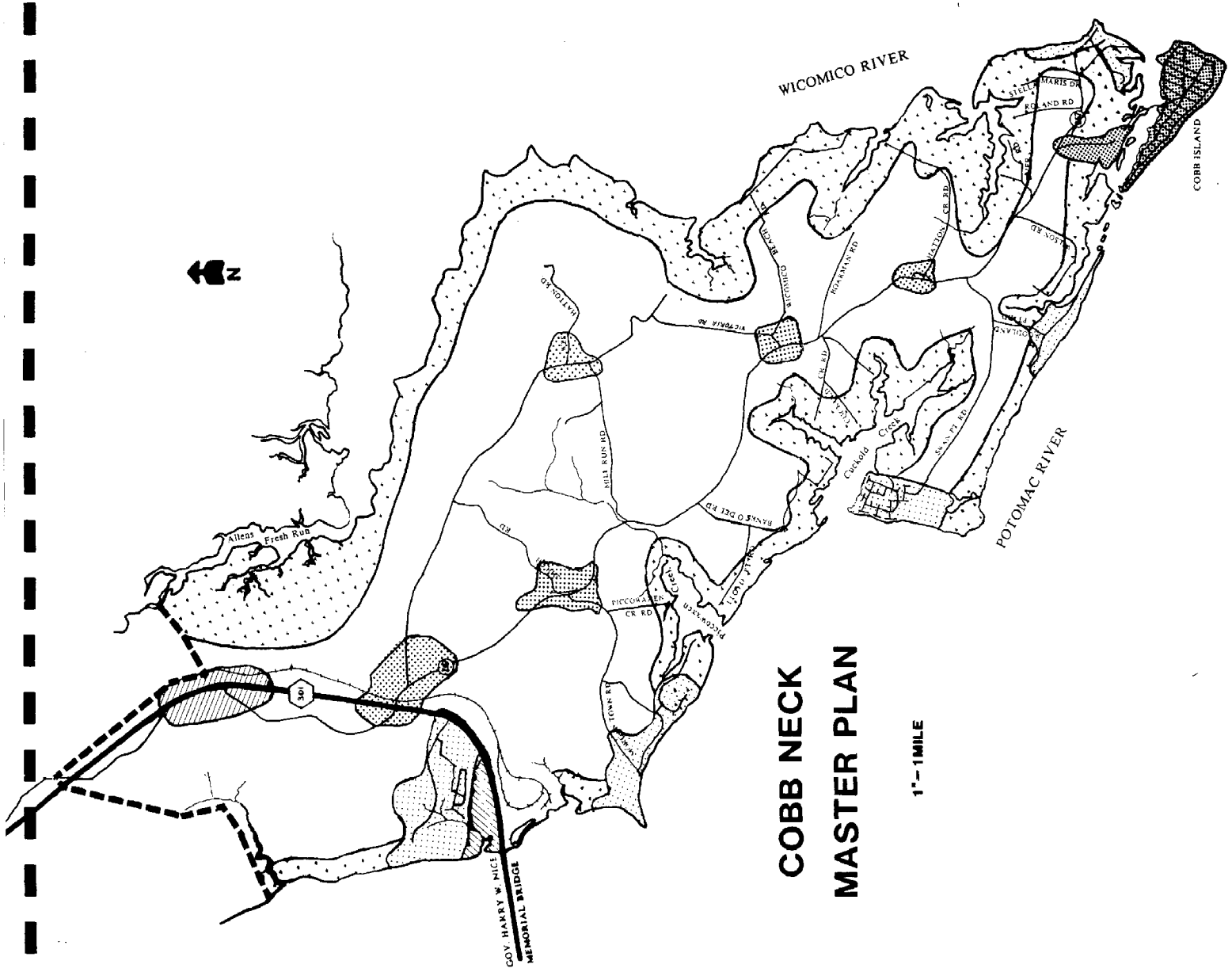
activity and the support industries in the area which are a necessary component of overall farm economy. A number of implementation techniques to achieve the farmland protection objective are discussed in the appendix to this plan. Recommendations concerning those considered best suited for application in Cobb Neck are identified in the Agricultural preservation element of this plan.

Waterfront and Resource Protection Areas

Issues of concern to Cobb Neck residents suggest that special emphasis should be placed on the preservation of low densities in waterfront areas of Cobb Neck. Their likely exists an almost unlimited demand for waterfront housing sites as evidenced by recent growth pressures on the peninsula. Absent a commitment to preserve the natural beauty of its shorelines area, residents could find this natural asset quickly altered by residential and commercial development likely in the form of Waterfront planned communities.

In keeping with resident objectives and the objectives of the County Chesapeake Bay Critical Area program greater restriction on the form and location of waterfront developments is proposed for these areas. Densities should be in keeping with Resource Conservation area standards in the Critical Area. Future development should be located adjacent to areas already disturbed by past development (e.g., adjacent to shorefront neighborhood conservation areas).

Any development which occurs should be carefully reviewed for compliance with Critical Area Program Criteria, observing requirements for protection of sensitive habitats and resources and establishing buffers from the shorefront.



MASTER PLAN
COBB NECK
CHARLES COUNTY, MARYLAND

LAND USE CONCEPT PLAN

- Commercial Center
- Town Center
- Village Center
- Neighborhood Conservation Areas
- Agricultural Preservation Areas
- Resource Protection Areas

REDMAN/JOHNSTON ASSOCIATES, LTD.

APPENDIX - A
RESIDENT IDENTIFIED PLANNING ISSUES AND CONCERNS IN COBB NECK

Through a public workshop conducted in Cobb Neck on November 18, 1987, area residents were afforded an opportunity to identify area issues of concern or problems which they felt should be given treatment in the preparation of a comprehensive plan for the peninsula. After preliminary identification of all issues by small groups all residents attending then selected those issues or concerns of greatest importance to permit scoring assignments and ranking to further focus on those issues foremost in priority which required planning treatment.

Table A-1 provides a listing of problems and concerns expressed by residents attending the workshop by rank and assigned scoring. Noteworthy is the fact that the six (6) highest priority concerns, ranging in score from 29 to 46 points appear to be directly related to natural resource protection or agricultural protection concerns.

In an effort to group various issues, problems and concerns in a manner which assured their treatment in the plan, they were restructured into groups or categories identified in table A-2 to establish a framework for preparation of plan elements.

All concerns identified, although rearranged by plan element are accounted for in the restructuring proposed. Some concerns may or may not be exclusively grouped into a single plan element but may cross two or more functional planning elements. For example "wastewater treatment and disposal" is both a "Resource protection" as a "Community facility" plan issue while the latter plan element may represent the best means of addressing the concern in the Plan. Likewise Restoring and maintaining the quality of life will have implications in the Land Use Plan element, Resource Protection element and Community Facilities element of the Plan.

Nevertheless, the proposed method of grouping the areas of concern provides a basis for formulating Plan goals and objectives and assuring each concern is considered for some means of treatment in one or more elements of the Plan. Within the context and framework greater opportunity exists to determine which area problems and concerns can be addressed through the Master Plan.

TABLE A-1

COBB NECK PUBLIC WORKSHOP - NOVEMBER 18, 1987
PROBLEMS AND CONCERNS

RANKING	PROBLEM/CONCERN		SCORE
1	A.	Falling Water Table (Drinking)	46
1	D.	Declining Seafood Industry (River Water Quality)	46
3	F.	Farmland Preservation	41
4	E.	Wildlife and Wetland Preservation	40
5	C.	Wastewater Treatment and Disposal	37
6	Q.	Quality of Life (Restore and Maintain)	29
7	H.	Need to Provide County Services (Police, Library, Recreational Facilities)	25
8.	P.	Industrial Growth Should Not Spread From 301 Corridor	17
9.	G.	Transportation (County Roads, Secondary Roads, Public)	15
9.	K.	Trash Dumping and Collection	15
11.	M.	Cobb Neck Unsuitable for Waterfront Planned Communities	14
12.	B.	Inadequate Stormwater Drainage	12
12.	R.	Fire and Rescue in Northern Part of the Neck	12
14.	U.	Need to Enhance Youth Activities	10
14.	I.	Selective Commercial Development	10
16.	X.	Preservation of Historic Buildings	9
16.	L.	Continued Growth Only in Existing Waterfront Development	9
18.	V.	Need to Plan for High School	5
18.	S.	Impact of Chesapeake Bay Critical Area Act to Landowners	5
20.	J.	Provide Overnight Accommodations	4
21.	O.	No Buffer Strips Between Development and Roads	3
22.	T.	Activity Center for Senior Citizens	1
23.	W.	No Public Building for Activities	0
24.	N.	No Public Ramps	0

TABLE A - 2

STRUCTURING OF RESIDENT CONCERNS BY PLAN ELEMENTS PROPOSED FOR TREATMENT

RESOURCE PROTECTION	LAND USE	TRANSPORTATION	COMMUNITY FACILITIES	ECONOMIC DEVELOPMENT
Falling Water Table/ Decline in Potable Surface Aquifer Supplies	Farmland Preservation	Transportation (County Roads, Secondary Roads, and Public)	Wastewater Treatment and and disposal	Declining Seafood Industry
Declining Seafood Industry River Water Quality)	Quality of Life (Restore and Maintain)		Quality of Life (Enhance and Restore)	Farmland Preservation
Wildlife and Wetland Preservation	Limit Industrial Growth to the 301 Corridor		Need to Provide County Services (Police, Library, Recreational Facilities)	Provide Overnight Accommodations
Wastewater Treatment and Disposal	Cobb Neck Unsuitable for Water front Planned Communities		Trash Dumping and Collection	
Quality of Life (Restore and Maintain)	Selective Commercial Development		Fire and Rescue in Northern Part of the Neck	
Inadequate Stormwater Drainage	Preservation of Historic Buildings		Need to Enhance Youth Activities	
	Continual Growth only in Existing Waterfront Development		Need to Plan for High School	
	Impact of Chesapeake Bay Critical Areas to Landowners		Activity Center for Senior Citizens	
	No Buffer Strips Between Development and Roads		No Public Buildings for Activities	
			No Public Ramps	

APPENDIX B
SAMPLE WELLS
COBB NECK

DATE COMPLETED	TYPE	DEPTH	WATER BEARING UNIT
1. 1947	Drilled	420	Raritan
2. 1938	D.O. *	31.5[M]	D.O.*
3. -	Drilled	400	Aquia
4. D.O.	D.O.	90	Calvert?
5. 1928	DUG	40	Pleis.
6. 1947	Drilled	324	Aquia
7. 1947	D.O.	347	Aquia
8. 1952	Jetted	397	D.O.
9. 1933	Jetted	300	D.O.
10. -	Driven	190	D.O.
11. 1930	D.O.	280	D.O.
12. -	-	20	Pleis.
13. -	Jetted	260	Aquia
14. 1920	Drilled	335	D.O.
15. 1912	Jetted	-	-
16. -	D.O.	275	Aquia
17. 1930	Drilled	274	Aquia
18. 1930	Driven	285	D.O.
19. 1940	Jetted	500	Aquia
20. 1940	-	273	D.O.
21. 1946	D.O.	275	D.O.
22. -	-	275	D.O.

23. -	-	275	D.O.
24. -	-	273	D.O.
25. -	-	275	D.O.
26. 1945	-	14.8^{M}	Pleis.
27. 1945	-	247	Aquia
28. 1947	-	273	Aquia
29. 1947	-	270	D.O.

* D.O Means: Data Omitted

Source: Records of Wells and Springs, Chemical Analyses, and Selected Well Logs in Charles County, Maryland, by T.H. Slaughter and C.P. Laughlin, 1966.

APPENDIX C

Descriptions of Level of Service Classifications

LOS A, represents a free flow where individual users are virtually unaffected by others in the traffic stream. LOS A describes a condition with low traffic volumes and high speeds with little or no delays. There is little or no restriction in maneuverability due to the presence of other vehicles. Drivers can maintain their desired speeds and can proceed through signals without having to wait unnecessarily;

LOS B, is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. LOS B affords above average conditions, and is typically used for design of rural highways;

LOS C, is also in the range of stable flows, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. LOS C is normally utilized as a measure of "average conditions" for design of facilities in suburban and urban locations. It is also considered acceptable in rural locations;

LOS D, represents high density, but stable flow. Speed and freedom to maneuver are severely restricted and the driver experiences a generally poor level of comfort. Small increases in traffic flow will generally cause operational problems at this level. LOS D is considered acceptable during short periods of time and is often used in large urban area;

LOS E, represents operating conditions at or near the capacity level. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.

LOS F, is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point and queues form behind the point. LOS F is characterized by demand volumes greater than the roadway capacity as complete congestion occurs and, in an extreme case, the volume passing a given point drops to zero. Under these conditions motorists seek other routes in order to bypass congestion, thus impacting adjacent streets.

APPENDIX D

RECREATION DEMAND - Cobb Neck, Charles County

ACTIVITY	PARTICIPATION RATE (%)	NUMBER OF PARTICIPANTS	INDIV. YEARLY OCCURRENCES	OCCASIONS DEMANDED PER YEAR	AGE ADJUST. OCCASIONS DEMANDED PER YEAR	LENGTH OF SEASON	FACILITY UNIT	FACILITY CAPACITY PER DAY	MINIMUM FACILITIES DEMANDED	PEAK FACILITIES DEMANDED
1987 POPULATION:	3,779									DESIGN F. 1.5
ARCHERY	3.00%	113	24.3	2,746	2,727	190	RANGE	80	0.2	0
BASEBALL/SOFTBALL	33.40%	1,262	24.2	30,540	30,151	190	FIELD	80	2	3
BASKETBALL	23.80%	899	54.4	48,906	45,984	215	COURT	80	2.7	4
BICYCLING TRIPS	8.60%	325	11.6	3,770	3,777	230	MILE	200	0.1	0
CONCERT, FAIRS, FESTIVALS	58.60%	2,214	4.2	9,299	9,299	140	SEAT	1	66.4	100
FOOTBALL/SOCCER/LACROSSE	22.60%	854	34	29,036	26,560	220	FIELD	80	1.5	2
GOLF	11.20%	423	23.3	9,856	10,107	220	HOLE	20	2.3	3
HORSEBACK RIDING	9.60%	363	11.6	4,211	4,123	240	MILE	150	0.1	0
NATURE WALKS	21.20%	801	17.2	13,777	14,185	235	MILE	144	0.4	1
PICNICING	45.00%	1,701	4.5	7,655	7,868	140	TABLE	10	5.6	8
SWIMMING (BEACH)	49.80%	1,882	10	18,820	19,027	90	MILE	13200	0	0
SWIMMING (POOL)	50.80%	1,920	33.2	63,744	64,594	95	ACRE	5000	0.1	0
SPECTATOR SPORTS	38.20%	1,444	13.4	19,350	19,350	220	SEAT	1	88	132
TENNIS/RACKET SPORTS	21.00%	794	22.5	17,865	17,637	190	COURT	32	2.9	4

Source: Anne Arundel County Office of Planning and Zoning

ACTIVITY	PARTICIPATION RATE (%)	NUMBER OF PARTICIPANTS	INDIV. YEARLY OCCURRENCES	OCCASIONS DEMANDED PER YEAR	AGE ADJUST. OCCASIONS DEMANDED PER YEAR	LENGTH OF SEASON	FACILITY UNIT	FACILITY CAPACITY PER DAY	MINIMUM FACILITIES DEMANDED	PEAK FACILITIES DEMANDED
1990 POPULATION:	4,319									DESIGN F. 1.5
ARCHERY	3.00%	130	24.3	3,159	3,116	190	RANGE	80	0.2	0
BASEBALL/SOFTBALL	33.40%	1,443	24.2	34,921	34,052	190	FIELD	80	2.2	3
BASKETBALL	23.80%	1,028	54.4	55,923	49,414	215	COURT	80	2.9	4
BICYCLING TRIPS	8.60%	371	11.6	4,304	4,318	230	MILE	200	0.1	0
CONCERT SEATS	58.60%	2,531	4.2	10,630	10,630	140	SEAT	1	75.9	114
FOOTBALL/SOCCER/LACROSSE	22.60%	976	34	33,184	27,672	220	FIELD	80	1.6	2
GOLF	11.20%	484	23.3	11,277	11,838	220	HOLE	20	2.7	4
HORSETRAIL	9.60%	415	11.6	4,814	4,618	240	MILE	150	0.1	0
NATURE WALKS	21.20%	916	17.2	15,755	16,663	235	MILE	144	0.5	1
PICNICING	45.00%	1,944	4.5	8,748	9,222	140	TABLE	10	6.6	10
SWIMMING (BEACH)	49.80%	2,151	10	21,510	21,972	90	MILE	13200	0	0
SWIMMING (POOL)	50.80%	2,194	33.2	72,841	74,734	95	ACRE	5000	0.2	0
SPECTATOR SPORTS	38.20%	1,650	13.4	22,110	22,110	220	SEAT	1	100.5	151
TENNIS/RACKET SPORTS	21.00%	907	22.5	20,408	19,900	190	COURT	32	3.3	5

Source: Anne Arundel County Office of Planning and Zoning

ACTIVITY	PARTICIPATION RATE (%)	NUMBER OF PARTICIPANTS	INDIV. YEARLY OCCURRENCES	OCCASIONS DEMANDED PER YEAR	AGE ADJUST. OCCASIONS DEMANDED PER YEAR	LENGTH OF SEASON	FACILITY UNIT	FACILITY CAPACITY PER DAY	MINIMUM FACILITIES DEMANDED	PEAK FACILITIES DEMANDED
1995 POPULATION:	6,344									DESIGN F. 1.5
ARCHERY	3.00%	190	24.3	4,617	4,521	190	RANGE	80	0.3	0
BASEBALL/SOFTBALL	33.40%	2,119	24.2	51,280	49,317	190	FIELD	80	3.2	5
BASKETBALL	23.80%	1,510	54.4	82,144	67,422	215	COURT	80	3.9	6
BICYCLING TRIPS	0.00%	0	11.6	0	0	230	MILE	200	0	0
CONCERT SEATS	58.60%	3,718	4.2	15,616	15,616	140	SEAT	1	111.5	167
FOOTBALL/SOCCER/LACROSSE	22.60%	1,434	34	48,756	36,285	220	FIELD	80	2.1	3
GOLF	11.20%	711	23.3	16,566	17,835	220	HOLE	20	4.1	6
HORSETRAIL	9.60%	609	11.6	7,064	6,622	240	MILE	150	0.2	0
NATURE WALKS	21.20%	1,345	17.2	23,134	25,187	235	MILE	144	0.7	1
PICNICING	45.00%	2,855	4.5	12,848	13,921	140	TABLE	10	9.9	15
SWIMMING (BEACH)	49.80%	3,159	10	31,590	32,634	90	MILE	13200	0	0
SWIMMING (POOL)	50.80%	3,223	33.2	107,004	111,286	95	ACRE	5000	0.2	0
SPECTATOR SPORTS	38.20%	2,423	13.4	32,468	32,468	220	SEAT	1	147.6	221
TENNIS/RACKET SPORTS	21.00%	1,332	22.5	29,970	28,823	190	COURT	32	4.7	7

Source: Anne Arundel County Office of Planning and Zoning

ACTIVITY	PARTICIPATION RATE (%)	NUMBER OF PARTICIPANTS	INDIV. YEARLY OCCURRENCES	OCCASIONS DEMANDED PER YEAR	AGE ADJUST. OCCASIONS DEMANDED PER YEAR	LENGTH OF SEASON	FACILITY UNIT	FACILITY CAPACITY PER DAY	MINIMUM FACILITIES DEMANDED
2000 POPULATION:	7,694								
ARCHERY	3.00%	190	24.3	4,617	4,617	190	RANGE	80	0.3
BASEBALL/SOFTBALL	33.40%	2,119	24.2	51,280	51,280	190	FIELD	80	3.4
BASKETBALL	23.80%	1,510	54.4	82,144	82,144	215	COURT	80	4.8
BICYCLING TRIPS	8.60%	546	11.6	6,334	6,334	230	MILE	200	0.1
CONCERT SEATS	58.60%	3,718	4.2	15,616	15,616	140	SEAT	1	111.5
FOOTBALL/SOCCER/LACROSSE	22.60%	1,434	34	48,756	48,756	220	FIELD	80	2.8
GOLF	11.20%	711	23.3	16,566	16,566	220	HOLE	20	3.8
HORSETRAIL	9.60%	609	11.6	7,064	7,064	240	MILE	150	0.2
NATURE WALKS	21.20%	1,345	17.2	23,134	23,134	235	MILE	144	0.7
PICNICING	45.00%	2,855	4.5	12,848	12,848	140	TABLE	10	9.2
SWIMMING (BEACH)	49.80%	3,159	10	31,590	31,590	90	MILE	13200	0
SWIMMING (POOL)	50.80%	3,223	33.2	107,004	107,004	95	ACRE	5000	0.2
SPECTATOR SPORTS	38.20%	2,423	13.4	32,468	32,468	220	SEAT	1	147.6
TENNIS/RACKET SPORTS	21.00%	1,332	22.5	29,970	29,970	190	COURT	32	4.9

Source: Anne Arundel County Office of Planning and Zoning

INDIV. AGE ADJUST.

ACTIVITY	PARTICIPATION RATE (%)	NUMBER OF PARTICIPANTS	YEARLY OCCURRENCES	OCCASIONS DEMANDED PER YEAR	OCCASIONS DEMANDED PER YEAR	LENGTH OF SEASON	FACILITY UNIT	FACILITY CAPACITY PER DAY	MINIMUM FACILITIES DEMANDED
2005 POPULATION:	9,044								
ARCHERY	3.00%	190	24.3	4,617	4,617	190	RANGE	80	0.3
BASEBALL/SOFTBALL	33.40%	2,119	24.2	51,280	51,280	190	FIELD	80	3.4
BASKETBALL	23.80%	1,510	54.4	82,144	82,144	215	COURT	80	4.8
BICYCLING TRIPS	8.60%	546	11.6	6,334	6,334	230	MILE	200	0.1
CONCERT SEATS	58.60%	3,718	4.2	15,616	15,616	140	SEAT	1	111.5
FOOTBALL/SOCCER/LACROSSE	22.60%	1,434	34	48,756	48,756	220	FIELD	80	2.8
GOLF	11.20%	711	23.3	16,566	16,566	220	HOLE	20	3.8
HORSETRAIL	9.60%	609	11.6	7,064	7,064	240	MILE	150	0.2
NATURE WALKS	21.20%	1,345	17.2	23,134	23,134	235	MILE	144	0.7
PICNICING	45.00%	2,855	4.5	12,848	12,848	140	TABLE	10	9.2
SWIMMING (BEACH)	49.80%	3,159	10	31,590	31,590	90	MILE	13200	0
SWIMMING (POOL)	50.80%	3,223	33.2	107,004	107,004	95	ACRE	5000	0.2
SPECTATOR SPORTS	38.20%	2,423	13.4	32,468	32,468	220	SEAT	1	147.6
TENNIS/RACKET SPORTS	21.00%	1,332	22.5	29,970	29,970	190	COURT	32	4.9

Source: Anne Arundel County Office of Planning and Zoning